Distington Community School Science Statement

Our curriculum is carefully designed to ensure coverage and progression. It provides pupils with memorable experiences, in addition to diverse and rich opportunities from which children can learn and develop a range of transferable skills. The children's own community, its heritage and traditions are frequently used as a starting point for engaging interest. A primary focus of our curriculum is to raise aspirations, create a sense of personal pride in achievement, and provide a purpose and relevance for learning. We provide a creative cross curriculum approach that has clear intent, a carefully designed and monitored implementation and a positive impact that allows children to develop knowledge, understanding and skills in each subject.

Progression of skills across the year groups…

EYFS

- Investigate further by asking questions.
- Describe an event in detail, using topic based vocabularly.
- Through verbal explanations, children should be able to problem solve and organise their thinking. They should also be able to describe how things work and have an idea of why they are happening.
- Investigate further through non-fiction books.
- Describe the outside world by using their senses to explore.
- Discuss different materials, how they differ and the changes that they may notice.
- To show interest in the four seasons and discuss the changes made to the environment.
- To be able to debate an answer and opinion using both words and actions.

Year 1

By the end of Year 1 children will be able to demonstrate a **knowledge and understanding** of:

Working Scientifically:

- Answer simple questions stimulated by observation & exploration of their world (e.g. Why a stone laying on the ground does not move? Why is it hot?)
- Present evidence in templates provided for them and make simple observations (e.g. use a simple tally of boys vs girls in class. Which is the majority?)
- Use evidence to ask questions & recognise that they can be answered in different ways (e.g. Q. How do you know which one dissolves? A. That one because you can't see it anymore. Or That one as the others are still visible.)
- Draw on their everyday experience to help answer questions. (E.g. explain that rain makes them wet.)
- Specific scientific vocabulary (see appendix 1.)

Plants:

- Describe the basic structure of a variety of common flowering plants, including trees. (e.g. a plant has leaves and roots etc…)
- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.
- Specific scientific vocabulary (see appendix 1.)

Animals Including Humans:

- Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates.
- 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 (e.g. birds, fish, amphibians, reptiles, mammals and invertebrates and including pets.)
- Identify, name and label the basic parts of the human body.
- Identify and label which part of the human body is associated with each sense.
- Specific scientific vocabulary (see appendix 1.)

Everyday Materials:

- Recognise the basic features of objects and distinguish it from the materials from which it is made (e.g. a car has tyres, they are made from rubber.)
- Use everyday terms to describe simple features or actions of objects. (e.g. describes the way vehicles move; how things fall.)
- Identify and name a variety of everyday simple materials. (e.g. wood, plastic, glass, metal, water, brick, fabric and rock.)
- Make accurate observations about the differences in simple physical properties of a variety of everyday materials. (e.g. when touching materials, describes whether they are hard or soft.)
- Show understanding of which materials are most suitable to different functions (e.g. What is the best material from which to make umbrellas?)
- Compare and group together a variety of everyday materials on the basis of their simple physical properties. (e.g. bendy/not bendy materials.)
- Specific scientific vocabulary (see appendix 1.)

Light and Shadows: *(Must be taught in Year 1 to ensure progression is shown in KS2.)*

- Observe the sun in the sky.
- Observe light coming from a source.
- Observe light blocked to form a shadow.
- Investigate how to make a place darker or lighter.
- Know light and dark safety.
- Specific scientific vocabulary (see appendix 1.)

Pushes and Pulls: *(Must be taught in Year 1 to ensure progression is shown in KS2.)*

- Recognise push and pull as a force to move an object.
- Recognise that force can be bigger or smaller and direction.
- Investigate push and pull with more ore less force. Heavier objects.
- Specific scientific vocabulary (see appendix 1.)

Seasonal Changes:

- Observe and record changes in the amount of day and night time between the seasons. (e.g. the longest day is in the Summer time.)
- Observe and describe weather change associated with the seasons. (e.g. It's colder in Winter than Summer time.)
- Show understanding of the impact on people and plants resulting from seasonal change. (e.g. describes what trees look like in winter compared to summer.
- Specific scientific vocabulary (see appendix 1.)

By the end of Year 1 children will be able to demonstrate the following **skills**:

Explaining Science:

- I can remember some simple facts about science.
- I can use and remember relevant science words during activities.
- I can describe what is happening using science with help.
- I can add science word labels with help to diagrams.
- I can select science facts to use in an answer with help.

Classification:

- I can sort by using simple yes or no statements.
- I can group by differences or similarities.
- I can link propertied of materials to an application with help.

Designing Experiments:

- I can suggest what might happen with help.
- I can use a limited range of science equipment correctly with help.
- I can notice risk with help and can list some common dangers.
- I can suggest an idea to investigate and ask questions.
- I can begin to identify variables in an investigation.
- I can follow a short demonstration using spoken and visual (picture) instructions.

Data, Tables and Graphs:

- I can position numbers on a number track up to 100.
- I can measure using non-standard measurements and compare, e.g. heavier/lighter.
- I can use a simple table by recording in words and numbers.
- I can use a frame to add to pictograms and block charts.
- I can add to block charts by counting up.

Making Conclusions:

- I can recognise, create and describe simple number patterns.
- I can use 'more or less' to compare numbers.
- I can describe the changes that are happening.
- I can explore different ways to do things through play.

Year 2

By the end of Year 2 children will be able to demonstrate a **knowledge and understanding** of:

Working Scientifically:

- Make some suggestions about how to find things out or how to collect data to answer a question (e.g. You could see which one stretches more. You could time it with a stop clock. You could measure how far it goes.)
- Compare objects, materials and living things (e.g. compare the limbs of different animals; texture/hardness of different materials.)
- Decide how to sort a group them and observe changes over time.
- Use and interpret simple tables where appropriate (e.g. block graphs and pictograms.)
- Specific scientific vocabulary (see appendix 1.)

Plants:

- Use what they say and their own ideas to suggest answers to questions (e.g. says that a plant will die without water.)
- Describe how seeds and bulbs grow into mature plants (e.g. seeds and bulbs need water to grow but most do not need light.)
- Specific scientific vocabulary (see appendix 1.)

Animals Including Humans:

- Describe how plants need water, light and a suitable temperature to grow and stay healthy (e.g. says that a plant will die without water.)
- Observe that animals, including humans, have offspring which grow into adults.
- Describe the basic needs of animals, including humans, for survival (e.g. the need for water, food and air.)
- Describe the importance of exercise for humans, eating the right amounts of different types of food and hygiene. (e.g. for nutritional purposes.)
- Can list/draw the things an animal needs to live/survive and understand that they live in different habitats.
- Specific scientific vocabulary (see appendix 1.)

Everyday Materials:

- Use observations to group objects, living things, or events (e.g. groups different solids that dissolve and don't.)
- Understands how some materials are used for more than one thing (e.g. metal can be used for coins, cans and cars etc.)
- Know that the shape of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (e.g. Observe which of a number of materials can be stretched and more.)
- Describe the effects of heating, cooling, stretching, bending and squashing (e.g. Water will boil safely in a metal kettle. It wouldn't if it was made from plastic.)
- Specific scientific vocabulary (see appendix 1.)

Living Things and their Habitats:

- Explore and compare the differences between things that are living, dead and things that have never been alive. Is a flame alive? Is a deciduous tree dead in winter?
- Identify that most living things live in habitats to which they are suited (e.g. On the seashore, in woodland, in the ocean, in the rainforest.)
- 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 (e.g. woodlice under stones, logs or leaf litter.)
- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain to identify and name different sources of food.
- Specific scientific vocabulary (see appendix 1.)

Building Circuits: *(Must be taught in Year 2 to ensure progression is shown in KS2.)*

- Identify appliances that run on electricity.
- Recognise the need for a power source and a closed circuit to make an appliance work.
- Identify components and symbols.
- Build simple closed circuits.
- Specific scientific vocabulary (see appendix 1.)

By the end of Year 2 children will be able to demonstrate the following **skills**:

Explaining Science:

- I can remember relevant science facts with some confidence.
- I can use and remember science words over a short period of time.
- I can use science to describe and recall what I have seen.
- I can add science labels and information to diagrams with help.
- I can select relevant science facts to use in an answer.

Classification:

- I can use simple spider keys with obvious differences.
- I can group by difference, similarity or change.
- I can link properties of materials to an application.

Designing Experiments:

- I can suggest what might happen in my investigation.
- I can use a range of science equipment correctly.
- I can notice risk in my investigation and know common dangers.
- I can suggest an idea to investigate from observations.
- I can identify variables in my investigations (label and describe.)
- I can follow short spoken and written instructions in order.

Data, Tables and Graphs:

- I can measure labelled divisions on a number line (including in steps.)
- I can measure standard units of length, mass and capacity.
- I can use a simple table, recording in words and numbers (including a tally chart.)
- I can construct simple pictograms and block charts.

- I can use the scale on a block chart toad the correct blocks.

Making Conclusions:

- I can describe simple features and patterns in data and charts.
- I can see obvious differences in sets of numbers.
- I can describe the changes that have happened.
- I can suggest a different way to do things with help.

Year 3

By the end of Year 3 children will be able to demonstrate a **knowledge and understanding** of:

Working Scientifically:

- Use straightforward scientific evidence to answer questions, or to support their findings (e.g. answer questions: "How do you think changing the amount of light will affect the plant…?"
- Suggest answers or solutions to questions/problems given to them. Answer questions such as: "How could we keep it hotter for longer?"
- Present simple data in a variety of ways, using that data to identify findings.
- Choose, from a list, at least on variable that needs to be kept the same in and investigation to make it a fair test (e.g. same distance when timing cars down a ramp.)
- Identify straightforward patterns in observations or in data presented in tables, pie and bar charts (e.g. Identify which food was the best source of energy from a bar chart.)
- Choose correct equipment from the list given (or set,) or content from information provided, to investigate a question/idea (e.g. beaker to heat water, thermometer to measure temperature.
- Specific scientific vocabulary (see appendix 1.)

Plants:

- Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers (e.g. leaves are for nutrition and flowers for reproduction.)
- Know the requirements of plants for life and growth (e.g. air, light, water, nutrients from soil and room to grow and how they vary from plant to plant.)
- Describe the way in which water is transported within plants.
- Understand the part that the flowers play in the life cycle of flowering plants (e.g. pollination, seed formation and seed dispersal.
- Specific scientific vocabulary (see appendix 1.)

Animals including Humans:

- Identify that animals, 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. (e.g. They might compare and contrast the diets of different animals.)
- Know the main body parts associated with the skeleton and muscles, understanding how different parts of the body have special functions (e.g. muscles for movement.)

- Specific scientific vocabulary (see appendix 1.)

Rocks:

- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
- Describe in simple terms how fossils are formed when things that have lived are trapped within rock.
- Recognise that soils are made from rocks and organic matter.
- Specific scientific vocabulary (see appendix 1.)

Light:

- Recognise that we need light in order to see things but that light from the sun can be dangerous and that dark is the absence of light.
- Know that light is reflected from surfaces and that shadows are formed when light from a light source is blocked by a solid object.
- Specific scientific vocabulary (see appendix 1.)

Forces and Magnets:

- Notice that magnetic forces can act without direct contact, unlike most other forces.
- Compare and group together a variety of everyday material on the basis of whether they are attracted to a magnet and identify some magnetic materials.
- Predict whether two magnets will attract or repel each other, depending on which way the poles are facing.
- Specific scientific vocabulary (see appendix 1.)

By the end of Year 3 children will be able to demonstrate the following **skills**:

Explaining Science:

- I can use science ideas and facts to describe and explain.
- I can remember science words I have used before over a longer period of time.
- I can begin to use science models to describe and sequence.
- I can add science labels and information to diagrams.
- I can link relevant facts together in an answer.

Classification:

- I can use large spider keys with obvious differences.
- I can create groups and criteria for sorting.
- I can combine properties required for an application with help.

Designing Experiments:

- I can predict cause and effect (causal prediction.)
- I can select suitable equipment for a task.
- I can predict obvious risk and act safety suggestions.
- I can identify cause and effect in my investigation.
- I can suggest a suitable data range for a variable.
- I can follow written instructions and write a simple method.

Data, Tables and Graphs:

- I can measure unlabelled divisions on a number line (positive values.)
- I can measure and compare values in standard units.
- I can use a frame to construct a simple table of results (cause and effect.)
- I can use a frame to construct a bar chart with help.
- I can draw bars on a bar chart (one axis coordinate.)

Making Conclusions:

- I can describe simple patterns in data, charts and graphs.
- I can see suitable differences in sets of numbers.
- I can describe my results by linking cause and effect.
- I can suggest improvements to my method.

Year 4

By the end of Year 4 children will be able to demonstrate a **knowledge and understanding** of:

Working Scientifically:

- Recognise scientific evidence that is for or against and argument or supports a scientific idea or not (e.g. evidence for how sound travels through different materials.)
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (e.g. the steepness of the gradient decides the speed of the object moving on it.)
- Identifying differences, similarities or changes related to simple scientific ideas and processes.
- Draw tables and bar charts to present simple data.
- Specific scientific vocabulary (see appendix 1.)

Living Things and their Habitats:

- Recognise a variety of ways in which living things can be grouped (e.g. put vertebrate animals into groups such as: fish, amphibians, reptiles, birds and mammals.)
- Use classification key to help group, identify and name a variety of living things.
- Recognise that environments can change and that this can sometimes pose dangers to living things (e.g. the positive effects of nature reserves.)
- Specific scientific vocabulary (see appendix 1.)

Animals including Humans:

- Describe the simple functions of the basic parts of the digestive system in humans (e.g. mouth, tongue, teeth, oesophagus, stomach and small and large intestine.
- Identify the different types of teeth in humans and their simple functions; finding out what damages teeth and how to look after them (e.g. the corrosive effects of plaque.)
- Construct and interpret a variety of food chains, identifying producers, predators and prey.
- Specific scientific vocabulary (see appendix 1.)

States of Matter:

- Compare and group materials together, according to whether they are solids, liquids or gases, exploring the effects of temperature on substances such as chocolate.
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
- Specific scientific vocabulary (see appendix 1.)

Sound:

- Identify how sounds what are made, associating some of them with something vibrating (e.g. in different musical instruments.)
- Identify patterns in the sounds that are made by different objects (e.g. elastic bands of different thickness.)
- Identify patterns between the volume of a sound and the strength of the vibrations that produced it, recognising that sound gets fainter as the distance from the sound source increases.
- Specific scientific vocabulary (see appendix 1.)

Electricity:

- Identify common appliances that run on electricity.
- Identify and name the basic parts of a simple series electrical circuit, including cells, wires, bulbs, switches and buzzers.
- Identify whether or not a lamp (bulb) will light in a simple series circuit, based on whether or not the lamp (bulb) is part of a loop with a battery.
- Recognise that a switch opens and closes a circuit and associate this with whether or not the lamp (bulb) is part of a complete loop with a battery.
- Recognise some common conductors and insulators and associate metals with being good conductors.
- Specific scientific vocabulary (see appendix 1.)

By the end of Year 4 children will be able to demonstrate the following **skills**:

Explaining Science:

- I can show a developing knowledge and understanding of science ideas and concepts.
- I can use simple science words correctly (understanding meaning and application.)
- I can use science models to describe (what and where.)
- I can annotate diagrams to help describe and explain.
- I can 'cluster' related facts together into points and recall.

Classification:

- I can use a range of spider keys with fine differences.
- I can create appropriate groups and criteria for sorting.
- I can describe combined properties required for an application.

Designing Experiments:

- I can predict a trend (relationship prediction.)
- I can select and use suitable equipment for the task.
- I can predict obvious risk and work safely (mostly.)
- I can plan a fair test by selecting variables to change and measure.
- I can suggest a data range and interval for a variable.
- I can design and write a simple ordered method (from plan.)

Data, Tables and Graphs:

- I can measure unmarked divisions on a number line (positive values.)
- I can measure and convert values in standard units (including time.)
- I can construct a simple table to compare cause and effect.
- I can construct bar charts correctly, including numerical axis.
- I can plot coordinates on a graph in the first quadrant.

Making Conclusions:

- I can describe simple patterns, trends and relationships in data.
- I can see differences (errors) in repeated data.
- I can describe trends and begin to use science to explain.
- I can suggest sensible improvements to my method.

Year 5

By the end of Year 5 children will be able to demonstrate a **knowledge and understanding** of:

Working Scientifically:

- Recognise that scientific ideas change and develop over time sometimes refuting or supporting previous understanding (e.g. evidence for or against global warming.)
- Give examples of where science cannot answer all our questions (e.g. Is there life on other planets?
- Identify the main variables that may affect investigative results and select which ones to change or keep the same (e.g. how forces affect elastic materials.)
- Suggest different possible conclusions from the same range of evidence (primary or secondary.) Come up with alternative conclusions… "What could this show? What else could it show?"
- Identify the evidence used in making a conclusion (e.g. UK diet is the least healthy.)
- Specific scientific vocabulary (see appendix 1.)

Living Things and their Habitats:

- Describe differences in the life cycles of mammals, an amphibian, an insect and a bird.
- Describe the life process of reproduction in some plants and animals (e.g. sexual reproduction in animals.
- Specific scientific vocabulary (see appendix 1.)

Animals including Humans:

- Describe the changes as humans develop to old age (e.g. changes experienced in puberty.)

- Specific scientific vocabulary (see appendix 1.)

Properties and Changes of Materials:

- Compare and group everyday materials on the basis of their properties, including; their hardness, solubility, transparency, conductivity (electrical and thermal) and respond to magnets.
- Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.
- Recognise that dissolving, mixing, and changes of state are reversible changes.
- Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including; through filtering, sieving and evaporating.
- Give reasons, based on evidence from comparative and fair tests, for a particular use of everyday materials, wood and plastic.
- Explain that some changes result in the formation of new materials and that this kind of change is not normally reversible, including; changes associated with burning the action of acid (vinegar) on bicarbonate of soda.
- Specific scientific vocabulary (see appendix 1.)

Earth and Space:

- Describe the movement of the Earth and other planets, relative to the Sun in the solar system and understand that the Earth, Sun and Mood are approximately spherical.
- Describe the movement of the Moon relative to the Earth.
- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.
- Specific scientific vocabulary (see appendix 1.)

Forces:

- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
- Identify the effects of air resistance, water resistance and friction that act between moving surfaces.
- Recognise that some mechanisms, including; levers, pulleys and gears, allow a smaller force to have a greater effect.
- Specific scientific vocabulary (see appendix 1.)

By the end of Year 5 children will be able to demonstrate the following **skills**:

Explaining Science:

- I can show a clear knowledge and understanding of science ideas and concepts.
- I can begin to use complex science words correctly.
- I can use science models to describe and begin to explain (why and how.)
- I can begin to draw and annotate my own diagrams.
- I can select and prioritise facts to create an argument and answer.

Classification:

- I can construct spider and use number keys.

- I can group and sub-group by easy observation (create criteria.)
- I can explain how properties suit an application.

Designing Experiments:

- I can use knowledge and understanding to explain my prediction (relationships.)
- I can select equipment with the right scale for the task with help.
- I can begin to plan to minimise risk and work safety consistently.
- I can plan a fair test and ensure controlled variables are kept the same.
- I can suggest a data range, intervals and sufficient readings.
- I can design and write an ordered method which controls variables.

Data, Tables and Graphs:

- I can measure divisions on a number line past zero (negative values.)
- I can measure and convert values in standard units (including area.)
- I can use a frame to construct a complex table of results.
- I can use a frame to construct a graph and can scale axis with help.
- I can join plotted coordinates with straight lines.

Making Conclusions:

- I can describe patterns, trends and relationships in data.
- I can spot anomalous data that does not fit the pattern.
- I can use data in my conclusions and use science to explain.
- I can identify strengths, weaknesses and improvements.

Year 6

By the end of Year 6 children will be able to demonstrate a **knowledge and understanding** of:

Working Scientifically:

- Interpret data from tables, bar and line graphs etc… to draw scientific conclusions consistently with the evidence (e.g. Use graphs and charts to describe the effects of diet on health.)
- Evaluate practical investigation methods and suggest improvements. (e.g. Describe some strengths and weaknesses of the plan/method. Make a comment on reliability. Suggest some practical ways to get better results.)
- Use clear sentences and correct scientific words and symbols to describe ideas and observations (e.g. describe heat transfer using correct wording.)
- Make sets of observations or measurements and say what the range and intervals are (e.g. record a set of results and state the highest and lowest measurements.)
- Specific scientific vocabulary (see appendix 1.)

Living Things and their Habitats:

- 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.

- Give reasons for classifying plants and animals based on specific characteristics.
- Specific scientific vocabulary (see appendix 1.)

Animals including Humans:

- Identify and name the main parts of the human circulatory system.
- Describe the functions of the heart, blood vessels and blood.
- Recognise the impact of diet, exercise, drugs and life style on the way their bodies function.
- Describe the ways in which nutrients and water are transported within animals including humans.
- Specific scientific vocabulary (see appendix 1.)

Evolution and Inheritance:

- Understand that living things have changed over time and that fossils provide information about living things that inhibited the Earth millions of years ago.
- 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.
- Specific scientific vocabulary (see appendix 1.)

Light:

- Recognise that light appears to travel in straight lines.
- Use the idea that light appears to travel 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 a light source to our eyes or from a light source 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 object that cast them.
- Specific scientific vocabulary (see appendix 1.)

Electricity:

- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of the cells used in a circuit.
- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and on/off position of switches.
- Use recognised symbols when representing a simple circuit in a diagram.
- Specific scientific vocabulary (see appendix 1.)

By the end of Year 6 children will be able to demonstrate the following **skills**:

Explaining Science:

- I can show a secure knowledge and understanding across all Key Stage 2 topics (including facts and concepts.)
- I can use complex science words correctly (fluency.)
- I can use science models to describe and explain (why, how, logical.)
- I can draw and annotate my own diagrams to describe and explain.
- I can present a clear and logical argument and answers.

Classification:

- I can construct both spider and number keys.
- I can group and sub-group by fine observation (create criteria.)
- I can explain the science behind a range of properties.

Designing Experiments:

- I can reason knowledge and understanding to make a hypothesis (relationship.)
- I can select and use equipment with the right scale for the task.
- I can plan to minimise risk and describe the safe use of equipment.
- I can plan a reliable fair test (including use of variable terminology.)
- I can plan to collect repeat readings (up to 3) and calculate the mean.
- I can design and write an ordered reliable method (including repeats.)

Data, Tables and Graphs:

- I can scale up or down a number line (axis) and decide on limits.
- I can measure and calculate with standard units (including area and volume.)
- I can construct a complex table to show repeated data.
- I can construct graphs and can scale at least one axis independently.
- I can plot mean values and draw a trend line for linear data.

Making Conclusions:

- I can describe changing patterns, trends and relationships.
- I can spot anomalous data and explain from the method.
- I can use primary and secondary data and science ideas in my conclusions.
- I can suggest limitations represented by data and practical improvements.

Inclusive Learning for SEND in Science

At DCS, we believe that every child is entitled to receive a high-quality, broad and balanced education regardless of their needs or disabilities. All of our children can expect to receive a science education that enables them to achieve the best possible outcomes and become confident and able to communicate their own views and understanding in their own preferred styles. Some ways in which we provide for such a curriculum are:

Cognition and Learning:

- Using personal stories to understand different contexts: 1:1 sessions, use of books and stories.
- Ensure previous years science learning objectives are covered.

- Key words displayed, use of shorter/less complex sentences in resources given, writing frames used where possible.
- Lots of retravel opportunities and reinforcement in science lessons with clear differentiation.
- Apply new vocabulary in lots of different contexts – pre-teaching vocabulary.
- Physical warm-ups to recall previous learning.

Communication and Interaction:

- Visual cues.
- Visual words/phrases.
- Minimise background noise.
- Children to face teacher (lip reading.)
- Write new vocabulary down.
- Duel coding.
- Language buddies.
- Lots of reinforcement.
- Lots of repetition.
- Scaffolding observational skills through careful questioning.
- Use of simple instructions.
- Step by step instructions.
- Careful and appropriate modelling to support understanding.
- Visual aids and duel coding.
- Video's of examples and practice.

<u>Physical and Sensory:</u>

- Ensure images are enlarged and accessible.
- Ensure children are close to whiteboard/source.
- Provide additional ways to record e.g. videos, drawings, verbal explanations.
- EYFS tools that may be larger to use.
- Working in groups to support.
- Pencil grips and tripod pencils.
- Use of ICT to support access.
- Addressing individual needs on a school trip to ensure full accrss e.g. breaks for walking etc.

<u>Social Emotional and Mental Health:</u>

- Ensure instructions are clear.
- Children provided with a role, which may not involve active participation.
- Use of ICT to support access.
- Providing appropriate resources so that children can access the lesson e.g. fiddle toy.
- Providing a safe space for the children within the lesson if needed – breakout space
- Teach with empathy and understand.
- Ensure children have opportunities to have sensory breaks etc form their work.
- Consider cognitive overload and the children's ability to manage this.
- Ensuring that parents are aware of curriculum and can support in science.

Every teacher at DCS is a teacher of SEND. Our provision is led by the SENDCo's and is enhanced by the collaboration of teachers, senior leaders, learning support staff, external

agencies/professionals, parents and most importantly of all – the child. Therefore, provision may vary from classroom to classroom to ensure the specific needs of all children are met in accordance to their own individuality.

(Appendix 1)

Non-negotiable subject specific vocabulary

Year 1

Working Scientifically:

Question, answer, observe, observing, equipment, identify, classify, sort, group, record, diagram, chart, map, data, compare, contrast, describe, biology, chemistry, physics.

Plants:

Flower, petal, leaf, leaves, stem, seed, root, soil, sun light, grow, growth, water, bark, trunk, fruit, branch, deciduous, wild, evergreen.

Animals including Humans:

Human, animal, mammal, reptile, amphibian, bird, carnivore, herbivore, omnivore, lizard, sense, sight, sound, touch, taste, smell, meat, plants.

Everyday materials:

Materials, wood, plastic, glass, metal, water, rock, hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, waterproof, absorbent, transparent, opaque, brick paper, fabric, elastic, foil, object, same, not bendy, not waterproof, not absorbent, record, investigation, watch, compare, sort, group, common, describe, properties, behave, prediction, predict, sensible, results, decision, test.

Light and shadows: *(Must be taught in Year 1 to ensure progression is shown in KS2.)*

Light, shadow, sun, sky, light source, observe, investigate, darker, lighter, dark, safety.

Pushes and Pulls: *(Must be taught in Year 1 to ensure progression is shown in KS2.)*

Push, pull, force, bigger force, smaller force, investigate, recognise, more force, less force, direction, heavy, light.

Seasonal Changes:

Seasons, summer, temperature, rain gauge, night, autumn, seasonal, rainfall, weather vane, observe, winter, changes, wind direction, day length, measure, spring, weather thermometer, day, record.

Year 2

Working Scientifically:

Question, answer, observe, observing, equipment, identify, classify, sort, group, record, diagram, chart, map, data, compare, contrast, describe, biology, chemistry, physics.

Plants:

Roots, stem, seeds, bulb, leaf, flower, grain, legume, fruit, compare, predict, comparative test, germinate, observation, life cycle, life process, diagram, measure, table, bar chart.

Animals including Humans:

Mammals, birds, reptiles, amphibians, egg, spawn, pregnancy, chick, hatching, tadpole, baby, toddler, child, teenager, adult, elderly, basic needs, lungs, gills, hygiene.

Everyday Materials:

Materials, rock, purpose, change, wood, brick, properties, recycling, plastic, paper, observations, reuse, glass, cardboard, record, invent, metal uses, compare, tarmac.

Living Things and their Habitats:

Living, non-living, dead, herbivore, carnivore, omnivore, urban, woodland, pond, coast, microhabitat, minibeast, ocean, Artic, tropical, desert, consumer, producer, predator, prey.

Building Circuits: *(Must be taught in Year 2 to ensure progression is shown in KS2.)*

Electricity, circuit, appliances, power source, closed circuit, open circuit, components, symbols.

Year 3

Working Scientifically:

Research, relevant, questions, scientific enquiry, comparative, fair test, systematic, careful observation, accurate, measurements, equipment, thermometer, data logger, data, gather, record, classify, present, drawings, labelled diagrams, keys, bar charts, tables, oral and written explanations, conclusion, predictions, differences, similarities, changes evidence, improve, secondary sources, guides, construct, interpret.

Plants:

Flower, seeds, leaf, stem, roots, petal, pollen, life cycle, dispersal, pollination, fertilisation, germination, ovary, ovule, sepal, stamen, anther, filament, stigma, style, trunk, anchor, nutrients, absorb, air, light, water soil.

Animals including Humans:

Nutrition, nutrients, carbohydrates, Protein, fats, fibre, water, vitamins, minerals, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrate, invertebrate, contract (muscles,) relax (muscles,) muscles, ball and socket joint, hinge joint, gliding joint.

Rocks:

Rocks, igneous, sedimentary, metamorphic, anthropic, permeable, impermeable, fossils, chemical fossils, body fossils, trace fossils, cast fossil, mould fossil, replacement fossil, Mary Anning, organic matter, topsoil, subsoil, base rock.

Light:

Light, source, dark, reflect, visible, bounce, mirror, ray beam, sun, glare, pupil, retina, travel, straight, opaque, translucent, transparent, block, shadow, materials, surface, smooth, illuminate, shiny, rough, reverse, bright, sunglasses, hat, brim, energy.

Forces and Magnets:

Force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass.

Year 4

Working Scientifically:

Research, relevant, questions, scientific enquiry, comparative, fair test, systematic, careful observation, accurate, measurements, equipment, thermometer, data logger, data, gather, record, classify, present, drawings, labelled diagrams, keys, bar charts, tables, oral and written explanations, conclusion, predictions, differences, similarities, changes evidence, improve, secondary sources, guides, construct, interpret.

Living Things and their Habitats:

Organism, variation, classification, vertebrates, invertebrates, reptile, bird, mammal, amphibian, fish, global, local, characteristic, key, habitat, environment, wildlife, endangered, extinct, conservation.

Animals including Humans:

Digestive system, mouth, tongue, teeth, oesophagus, stomach, gallbladder, small intestine, pancreas, anus, rectum, large intestine, liver, duodenum, tooth, canine, incisor, molar, premolars, producer, consumer.

States of Matter:

Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, temperature, condensation, process, water, evaporation, ice, water vapour, energy, precipitation, collection, carbon dioxide, weigh, mass, thermometer, dry, heat, clouds, rain, sleet, hail, snow.

Sound:

Sound, volume, amplitude, loud, quiet, travel, waves, particles, ear, high pitch, low pitch, pitch, energy, distance, vibrate, soundproof, absorb, music, vibration, instruments.

Electricity:

Electricity, neutrons, protons, electrons, nucleus, atom, electric current, appliances, mains, crocodile clip, wires, bulb, bulb holder, battery (cell,) battery holder, motor, buzzer, switch, electrical conductor, electrical insulator,

Year 5

Working Scientifically:

Plan, variables, measurements, accuracy, precision, repeat readings, record data, scientific diagrams, labels, classification, keys, tables, scatter graphs, bar graphs, line graphs, predictions, further comparative, fair test, report and present conclusions, casual relationships, explanations, degree of trust, written display, evidence, support, refute ideas and arguments, identify, classify, describe, patterns, systematic, quantitative, measurements.

Living Things and their Habitats:

Sexual, asexual, reproduction, cell, fertilisation, pollution, male, female, pregnancy, gestation, young, Jane Goodall, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant.

Animals including Humans:

Puberty, life cycle, gestation, growth, reproduce, fetus, baby, fertilisation, toddler, child, teenager, adult, old age, life expectancy, adolescence, adulthood, early adulthood, middle adulthood, late adulthood, childhood.

Properties and Changes of Materials:

Material, conductor, dissolve, insoluble, suspension, chemical, physical, irreversible, solution, reversible, separate, mixture, insulator, transparent, flexible, permeable, soluble, property, magnetic, hard, heat, electric, resistance, circuit, liquid, solid, filter, sieve, gas.

Earth and Space:

Earth, Sun, Moon, moon, planets, solar system, star, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, rotate, day, night, Aristotle, Ptolemy, Galileo, Copernicus, Brahe, Alhazen, orbit, axis, spherical, heliocentric, geocentric.

Forces:

Force, push, pull, opposing, gravity, air resistance, water resistance, friction, Isaac Newton Galileo Galilei, streamline, brake, mechanism, lever, gear, cog, pully, machine.

Year 6

Working Scientifically:

Plan, variables, measurements, accuracy, precision, repeat readings, record data, scientific diagrams, labels, classification, keys, tables, scatter graphs, bar graphs, line graphs, predictions, further comparative, fair test, report and present conclusions, casual relationships, explanations, degree of trust, written display, evidence, support, refute ideas and arguments, identify, classify, describe, patterns, systematic, quantitative, measurements.

Living Things and their Habitats:

Classify, compare, Carl Linnaeus, linnaean, classification, domain, kingdom, phylum, class, order, family, genus, species, characteristics, vertebrates, invertebrates, microorganism, organism, flowering, non-flowering,

Animals including Humans:

Circulatory system, heart, blood vessels, blood, artery, lungs, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco.

Evolution and Inheritance:

Evolution, inheritance, adaptation, inherited, adaptive traits, natural selection, Charles Darwin, Alfred Wallace, DNA, genes, variation, parent, offspring, fossil, environment, habitat, fossilisation, plants, animals, living things.

Light:

Shadow, filter, light, colour, reflect, absorb, refract, spectrum, wavelength, prism, visible, lens, angle, incidence, straight, ray, beam, wave, photon, energy, source, opaque, size, distance, change, tilt, see, transparent, rainbow, bend, focus, focal point, normal, periscope, travel, vacuum,

Electricity:

Electricity, electric current, Thomas Edison, Nikola Tesla, Alessandro Volta, alternating current, direct current, battery, cell, bulb, bulb, wire, open switch, closed switch, motor, buzzer, current, voltage, brightness, loudness.

(Appendix 2)

Non-negotiable skills specific vocabulary

Working Scientifically – Skills Word List

KS1

Axis, block chart, cause, data, effect, experiment, observation, pictogram, prediction, results table, risk, standard units, variable.

LKS2

Bar chart, bar graph, comparative test, conclusion, continuous data, coordinate, data interval, data point, data range, discrete data, fair test, line graph, method, prediction (corelation/relationship,) prediction (scientific/causal,) spider key, trend.

UKS2

Anomalous data, controlled variable, data set, data spread, dependent variable, hypothesis, independent variable, mean, number key, precision, primary data, reliability, results table (complex,) risk assessment, secondary data, trend line, valid data.

(Appendix 3)

Science skills progression of Reception (EYFS)

By the end of Reception (EYFS) children will be able to demonstrate the following **skills**:

Explaining Science:

- I can remember simple facts about science with help.
- I can use science words during an activity with help.
- I can describe what is happening using words and actions.
- I can use appropriate pictures and words to label items.
- I can begin to select facts to use in and answer with help.

Classification:

- I can sort using instructions or pictures.
- I can group by familiar features (including size, colour, shape etc.)
- I can use my senses to identify properties of materials.

Designing Experiments:

- I can suggest what might be the 'best' or 'worst.'
- I can use a range of everyday items to investigate.
- I can work safely when given instructions with some supervision.
- I can suggest an idea to investigate with help.
- I am aware that factors change in an investigation.
- I follow short demonstrations and spoken instructions with help.

Data, Tables and Graphs:

- I can position numbers on a number track up to 20.
- I can use non-standard units to measure and compare.
- I can use a simple table by recording in pictures and words.
- I can use prepared pictograms to record my observations.
- I can add to pictograms by counting up.

Making Conclusions:

- I can recognise, create and describe simple patterns (e.g. size.)
- I can begin to use 'more or less', etc to compare observations.
- I can talk about changes that I observe during activities.
- I can explore 'what if…' questions through play.

(Appendix 4)

Science skills progression of Year 6 + (Greater depth at the end of KS2)

By the end of Year 6+ (KS2) children will be able to demonstrate the following **skills**:

Explaining Science:

- I can show a deeper 'mastery' of knowledge and understanding across KS2.
- I can use complex science words accurately and fluently.
- I can begin to apply science models to explain new events.
- I can draw and annotate my own diagrams (flow and complex.)
- I can present an extended and logical argument or answer.

Classification:

- I can construct both complex spider and number keys.
- I can group and re-group using combinations of criteria.
- I can describe how materials properties can change.

Designing Experiments:

- I can reason knowledge and understanding to generate a testable hypothesis.
- I can select and use equipment for increased precision.
- I can predict and control a range of risks independently.
- I can plan a reliable fair test with increased precision.
- I can plan to reduce error by care of measurement.
- I can design and write a reliable method (including repeats and precision.)

Data, Tables and Graphs:

- I can scale up and down a number line (axis) confidently.
- I can calculate compound units (e.g. acceleration.)
- I can construct complex tables to include calculations.
- I can construct graphs and can scale each axis confidently.
- I can plot mean values and draw a trend line for non-linear data.

Making Conclusions:

- I can compare changing patterns, trends and relationships.
- I can deal with anomalous data to increase reliability.
- I can use a range of data in conclusions and use models to explain.
- I can suggest limitations using data and justify improvements.