**Working scientifically**

Pupils in KS1, KS2, ASD, Deer, Hedgehog and Squirrel (KS3) and Owl (KS4) should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Asking simple questions and recognising that they can be answered in different ways.

- Observing closely, using simple equipment.

- Performing simple tests.

- Identifying and classifying.

- Using their observations and ideas to suggest answers to questions.

- Gathering and recording data to help in answering questions.

Pupils working in Rabbit, Badger, Fox and Otter (KS3) should develop a deeper understanding of a wide range of scientific ideas. They should do this through:

- Exploring and talking about their ideas.

- Asking their own questions about scientific phenomena.

- Analysing functions, relationships and interactions more systematically.

Pupils should:

- Encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how they world operates.

- They should begin to recognise that scientific ideas change and develop over time.

- They should begin to select the most appropriate ways to answer scientific questions using different types of scientific enquiry including: observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information.

- Draw conclusions based on their data and observations.

- Use evidence to justify their ideas.

- Use their scientific knowledge and understanding to explain their findings.

**Assessment**

The attainment of pupils working below old P4 will be tracked using ‘The Engagement Model’.

All other pupils will be tracked using the summative assessment tool, Bsquared V5 – Combined Science. Achievements will be recorded as engagement, gaining skills and understanding, and mastered. This will be converted and recorded in SIMS as points.

**National Curriculum links**

*KS1 classes (Bumblebee, Butterfly) lower KS2 (Bluebell + Sunflower) Daisy + Rose (KS2 ASD) – EYFS/KS1 statutory requirements;*

*Upper KS2 (Daffodil + Poppy), KS3 (Otter, Deer, Hedgehog, Squirrel, Dormouse + Owl) – lower KS2 statutory requirements;*

*Rabbit, Badger, Fox – upper KS2/KS3 statutory requirements*

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| --- | --- | --- |
| Biology | Chemistry | Physics |
| Animals including humans  Plants  Living things and habitats  Evolution and inheritance | Everyday materials  Uses of everyday materials  Rocks  States of matter  Properties of materials | Seasonal changes  Light  Forces and magnets  Sound  Electricity  Earth and space |

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|  | | Autumn 1 | | Autumn 2 | Spring 1 | Spring 2 | | Summer 1 | | Summer 2 | |
| **Foundation** | | | | | | | | | | | |
| **Ladybird**  **EYFS**  **Understanding the world** | Year A | Traditional tales | | Colours | Bears | The Farm | | At the Zoo | | People who help us | |
| Year B | All about me | | Space | Nursery rhymes | In the Garden | | Dinosaurs | | The seaside | |
| **Caterpillar**  **EYFS**  **Understanding the world** | Year A | Traditional tales | | Colours | Bears | The Farm | | At the Zoo | | People who help us | |
| Year B | All about me | | Space | Nursery rhymes | In the Garden | | Dinosaurs | | The seaside | |
| **Grasshopper**  **EYFS**  **Understanding the world**  Linked to SCERTS | Year A | Traditional tales  SCERTS | | Colours  SCERTS | Bears  SCERTS | The Farm  SCERTS | | At the Zoo  SCERTS | | People who help us  SCERTS | |
| Year B | All about me  SCERTS | | Space  SCERTS | Nursery rhymes  SCERTS | In the Garden  SCERTS | | Dinosaurs  SCERTS | | The seaside  SCERTS | |
|  | | **Learning Through Play**  **Play activities to be provided in rotation from the following list, to be linked to the science theme and/ or topic theme where possible.** | | | **Learning through sand play**  **Learning through water play**  **Learning through dough and clay play** | | | **Learning through table top play**  **Learning through construction play**  **Learning through outdoor play** | | | |
| **KS1** | | | | | | | | | | | |
|  | | Autumn 1 | Autumn 2 | | Spring 1 | | Spring 2 | Summer 1 | | | Summer 2 |
| **Butterfly**  **Assessed using EYFS understanding the world and SCERTS** | Year A | Fantasy stories  SCERTS | Weather and Seasons  SCERTS | | Animals and habitats  SCERTS | | Growing food  SCERTS | Minibeasts  SCERTS | | | When I grow up  SCERTS |
| Year B | Marvelous me  SCERTS | The Solar system  SCERTS | | Poetry  SCERTS | | Plants and flowers  SCERTS | Pre-Historic world  SCERTS | | | Under the sea  SCERTS |
| **Bumblebee**  Topic based  Assessed using EYFS and Bsquared | Year A | Fantasy stories | Weather and Seasons | | Animals and habitats | | Growing food | Minibeasts | | | When I grow up |
| Year B | Marvelous me | The Solar system | | Poetry | | Plants and flowers | Pre Historic world | | | Under the sea |
| **Key Stage 2** | | | | | | | | | | | |
|  | | **Autumn 1** | | **Autumn 2** | **Spring 1** | **Spring 2** | | **Summer 1** | **Summer 2** | | |
| **Bluebell** | Year A | **I’m alive! What else is?**  *Scientific Enquiry/Biology* | | **Light + colour**  *Scientific Enquiry/Physics* | **Floating + sinking**  *Scientific Enquiry/Physics* | **Collections of rocks**  *Scientific Enquiry/Chemistry* | | **Watching plants grow**  *Scientific Enquiry/Biology* | **Describing materials**  *Scientific Enquiry/Chemistry* | | |
| Year B | **Animals around me**  *Scientific Enquiry/Biology* | | **Why does it light up?**  *Scientific Enquiry/Physics* | **Pushes pulls + messy magnets!**  *Scientific Enquiry/Physics* | **Patterns in rocks**  *Scientific Enquiry/Chemistry* | | **Why do plants grow?**  *Scientific Enquiry/Biology* | **Changing materials**  *Scientific Enquiry/Chemistry* | | |
| **Sunflower** | Year A | **What + how can you see?**  *Scientific Enquiry/Biology* | | **Applying forces**  *Scientific Enquiry/Physics* | **Rocks + soil**  *Scientific Enquiry/Chemistry* | **Comparing plants**  *Scientific Enquiry/Biology* | | **Testing materials**  *Scientific Enquiry/Chemistry* | **All about animals – Including us!**  *Scientific Enquiry/Biology* | | |
| Year B | **Exploring electricity**  *Scientific Enquiry/Physics* | | **Changes in materials**  *Scientific Enquiry/Chemistry* | **Describing rocks**  *Scientific Enquiry/Chemistry* | **Why do plants grow?**  *Scientific Enquiry/Biology* | | **Why does it move?**  *Scientific Enquiry/Physics* | **Habitats**  *Scientific Enquiry/Biology* | | |
| **Poppy** | Year A | **Are rocks similar?**  *Scientific Enquiry/Chemistry* | | **Places and habitats**  *Scientific Enquiry/Biology* | **Investigating forces**  *Scientific Enquiry/Physics* | **Experimenting with materials + their properties**  *Scientific Enquiry/Chemistry* | | **Forms of light + shadows**  *Scientific Enquiry/Physics* | **Lifecycles**  *Scientific Enquiry/Biology* | | |
| Year B | **Describing materials and their properties**  *Scientific Enquiry/Chemistry* | | **Why do animals live there?**  *Scientific Enquiry/Biology* | **Testing magnets**  *Scientific Enquiry/Physics* | **Rocks in space**  *Scientific Enquiry/Chemistry* | | **Lights + colour**  *Scientific Enquiry/Physics* | **Environments**  *Scientific Enquiry/Biology* | | |
| **Daffodil** | Year A | **Changing materials**  *Scientific Enquiry/Chemistry* | | **Under the magnifying glass – Living things**  *Scientific Enquiry/Biology* | **Where do rocks come from?**  *Scientific Enquiry/Chemistry* | **Representing forces**  *Scientific Enquiry/Physics* | | **Natural and man-made lights**  *Scientific Enquiry/Physics* | **Staying alive!**  *Scientific Enquiry/Biology* | | |
|  | Year B | **How are everyday objects made?**  *Scientific Enquiry/Chemistry* | | **Living things and their habitats**  *Scientific Enquiry/Biology* | **How do rocks change over time?**  *Scientific Enquiry/Chemistry* | **Why do things happen?**  *Scientific Enquiry/Chemistry*  *Scientific Enquiry/Physics* | | **Natural vs man made light**  *Scientific Enquiry/Physics* | **Why are we alive?**  *Scientific Enquiry/Biology* | | |
| **Daisy /Rose**  topic based  Linked to  SCERTS | Year A | **Under the sea**  **I’m alive! What else is?**  *Scientific Enquiry/Biology* | | **Under the sea**  **Collections of rocks**  *Scientific Enquiry/Chemistry* | **Outside**  **Rocks + soil**  *Scientific Enquiry/Chemistry* | **Outside**  **Why does it light up?**  *Scientific Enquiry/Physics* | | **Kings and Queens**  **Applying forces**  *Scientific Enquiry/Physics* | **Kings and Queens**  **Testing materials**  *Scientific Enquiry/Chemistry* | | |
| Year B | **Africa**  **Animals around me**  *Scientific Enquiry/Biology* | | **Africa**  **Light + colour**  *Scientific Enquiry/Physics* | **People who help us**  **Changing materials**  *Scientific Enquiry/Chemistry* | **People who help us**  **Exploring electricity**  *Scientific Enquiry/Physics*  *Scientific Enquiry/Chemistry* | | **The Farm**  **Why do plants grow?**  *Scientific Enquiry/Biology* | **The Farm**  **Describing materials**  *Scientific Enquiry/Chemistry* | | |
| Year C | **Polar Regions**  **Floating + sinking**  *Scientific Enquiry/Physics* | | **Polar Regions**    **Changes in materials**  *Scientific Enquiry/Chemistry* | **Toys**  **Pushes pulls + messy magnets!**  *Scientific Enquiry/Physics* | **Toys**  **Why does it move?**  *Scientific Enquiry/Physics* | | **Seaside**  **Patterns in rocks**  *Scientific Enquiry/Chemistry* | **Seaside**  **Comparing plants**  *Scientific Enquiry/Biology* | | |
| Year D | **All about me**  **All about animals – Including us!**  *Scientific Enquiry/Biology* | | **All about me**  **What + how can you see?**  *Scientific Enquiry/Biology* | **School**  **Watching plants grow**  *Scientific Enquiry/Biology* | **School**  **Describing rocks**  *Scientific Enquiry/Chemistry* | | **Habitats**  **Changes in materials**  *Scientific Enquiry/Chemistry* | **Habitats**  **Habitats**  *Scientific Enquiry/Biology* | | |

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| **Key Stage 3** | | | | | | | |
|  | | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Rabbit** | Year A | **Earth and Space**  *Scientific Enquiry/Physics* | **Properties and changes of materials - Magnets**  *Scientific Enquiry/Chemistry* | **Lifecycles and reproduction (mammals, amphibians, insects and birds)**  *Scientific Enquiry/Biology* | **Energy**  *Scientific Enquiry/Biology* | ***Electricity***  *Current electricity and static electricity.*  *Scientific Enquiry/Physics* | **Structure and function of living organisms – Nutrition and digestion**  The digestive system and healthy diets.  *Scientific Enquiry/Biology* |
| Year B | **Forces – Resistance, friction and gravity**  *Scientific Enquiry/Physics* | **Properties and changes of materials – Solids, liquids and gases**  *Scientific Enquiry/Chemistry* | **The characteristics of living things**  *Scientific Enquiry/Biology* | **Electricity and electromagnetism**  *Scientific Enquiry/Physics*  **Waves (observed, sound, energy, light.)**  *Scientific Enquiry/Physics* | **Chemical reactions**  *Acids and alkali’s, combustion, using the PH scale*  *Scientific Enquiry/Chemistry* | **Structure and function of living organisms – Plant cells/animal cells.**  *Using a microscope and naming parts of cells*  *Scientific Enquiry/Biology* |
| Year C | **Natural light vs electricity**  *Scientific Enquiry/Physics* | **Properties and changes of materials – Substance to solution**  *Scientific Enquiry/Chemistry* | **The Human body and how it functions**  *Scientific Enquiry/Biology* | **Electricity and electromagnetism**  *Scientific Enquiry/Physics* | **Pure and impure substances.**  Dissolving, mixing, filtering, evaporating, distillation.  *Scientific Enquiry/Chemistry* | **Structure and function of living organisms – the skeleton and muscular system.**  The structure and function of the skeleton and muscles.  *Scientific Enquiry/Biology* |
| **Badger**  **Fox** | Year A | **Earth and Space**  *Scientific Enquiry/Physics* | **Magnets**  *Scientific Enquiry/Chemistry* | **Lifecycles and reproduction (mammals, amphibians, insects and birds)**  *Scientific Enquiry/Biology* | **Waves (observed, sound, energy, light.)**  *Scientific Enquiry/Physics* | **Chemical reactions**  *Scientific Enquiry/Chemistry* | **Food chains**  *Scientific Enquiry/Biology* |
| Year B | **Forces – Resistance, friction and gravity**  *Scientific Enquiry/Physics* | **Solids, liquids and gases**  *Scientific Enquiry/Chemistry* | **Plants – lifecycles and development**  *Scientific Enquiry/Biology* | **Electricity**  *Scientific Enquiry/Physics* | **Temperature**  *Scientific Enquiry/Chemistry* | **The characteristics of living things**  *Scientific Enquiry/Biology* |
| Year C | **Natural light vs electricity**  *Scientific Enquiry/Physics* | **The water cycle**  *Scientific Enquiry/Chemistry* | **Animals including humans – development**  *Scientific Enquiry/Biology* | **The sun, moon and Earth**  *Scientific Enquiry/Physics* | **Properties and changing materials**  *Scientific Enquiry/Chemistry* | **The Human body and how it functions**  *Scientific Enquiry/Biology* |
| **Otter**  **Deer** | Year A | **Animals around me**  *Scientific Enquiry/Biology* | **Properties and changes of materials – Solids, liquids and gases**  *Scientific Enquiry/Chemistry* | **Changing materials**  *Scientific Enquiry/Chemistry* | **Why do plants grow?**  *Scientific Enquiry/Biology* | **Light + colour**  *Scientific Enquiry/Physics* | **Applying forces**  *Scientific Enquiry/Physics* |
| Year B | **Pushes pulls + messy magnets!**  *Scientific Enquiry/Physics* | **I’m alive! What else is?**  *Scientific Enquiry/Biology* | **Testing materials**  *Scientific Enquiry/Chemistry* | **Amazing Earth**  *Scientific Enquiry/Physics* | **Watching plants grow**  *Scientific Enquiry/Biology* | **Why does it light up?**  *Scientific Enquiry/Physics* |
| Year C | **Amazing Earth**  *Scientific Enquiry/Physics* | **Wonderful weather!**  *Scientific Enquiry/Physics* | **Why does it light up?**  *Scientific Enquiry/Physics* | **Stars + Space**  *Scientific Enquiry/Physics* | **I’m Alive! What else is?**  *Scientific Enquiry/Biology* | **Pushes, pulls and messy magnets**  *Scientific Enquiry/Physics* |
| **Hedgehog**  **Squirrel** | Year A | **Why do plants grow?**  *Scientific Enquiry/Biology* | **Applying forces**  *Scientific Enquiry/Physics* | **Caring for animals**  *Scientific Enquiry/Biology* | **Hot or cold?**  *Scientific Enquiry/Physics* | **Describing materials**  *Scientific Enquiry/Chemistry* | **Beyond what we can see**  *Scientific Enquiry/Physics* |
| Year B | Sound and light  *Scientific Enquiry/Physics* | Changes of materials  *Scientific Enquiry/Chemistry* | Evolution and adaptation  *Scientific Enquiry/Biology* | Electricity  *Scientific Enquiry/Physics* | Life cycles  *Scientific Enquiry/Biology* | States of matter  *Scientific Enquiry/Chemistry* |
| Year C | **Amazing Earth**  *Scientific Enquiry/Physics* | **Wonderful weather!**  *Scientific Enquiry/Physics* | **Why does it light up?**  *Scientific Enquiry/Physics* | **Stars + space**  *Scientific Enquiry/Physics* | **I’m Alive! What else is?**  *Scientific Enquiry/Biology* | **Pushes and pulls and messy magnets**  *Scientific Enquiry/Physics* |
| **Dormouse**  ASD SCERTS | Year A | **Festivals**  Colours  *Scientific Enquiry/Chemistry* | **Festivals**  Life cycles  *Scientific Enquiry/Biology* | **Our community**  Buildings  *Scientific Enquiry/Chemistry* | **Our community**  Transport  *Scientific Enquiry/Physics* | **The rainforest**  Nature  *Scientific Enquiry/Biology* | **The rainforest**  Outdoors  *Scientific Enquiry/Biology* |
| Year B | **The Arctic**  Floating and sinking  *Scientific Enquiry/Physics* | **The Arctic**  Environments  *Scientific Enquiry/Biology* | **Space**  Planets  *Scientific Enquiry/Physics* | **Space**  Forces  *Scientific Enquiry/Physics* | **Adventures**  Describing materials  *Scientific Enquiry/Chemistry* | **Adventures**  Comparing plants  *Scientific Enquiry/Biology* |
| Year C | **Outside**  Fossils and prehistoric animals  *Scientific Enquiry/Biology*  *Scientific Enquiry/Physics* | **Outside**  We are what we eat  *Scientific Enquiry/Biology* | **All about me**  Humans and animals – our moving body  Our growing bodies  *Scientific Enquiry/Biology* | **All about me**  Life cycles and human development  *Scientific Enquiry/Biology* | **Homes**  Different materials  *Scientific Enquiry/Chemistry* | **Homes**  Our world  *Scientific Enquiry/Biology*  *Scientific Enquiry/Physics* |

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| **Key Stage 4** | | | | | | | |
|  | | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Woodpecker**  **Hawk**  **Robin** | Year A | ASDAN short course | ASDAN short course | ASDAN short course | ASDAN short course | ASDAN short course | ASDAN short course |
| Year B | ASDAN short course | ASDAN short course | ASDAN short course | ASDAN short course | ASDAN short course | ASDAN short course |
| Year C | ASDAN short course | ASDAN short course | ASDAN short course | ASDAN short course | ASDAN short course | ASDAN short course |
| **Owl** | Year A | **Changing materials**  *Scientific Enquiry/Physics* | **Under the magnifying glass – Living things**  *Scientific Enquiry/Biology* | **Representing forces**  *Scientific Enquiry/Physics* | **Where do rocks come from?**  *Scientific Enquiry/Chemistry* | **Natural and man-made lights**  *Scientific Enquiry/Physics* | **Staying alive!**  *Scientific Enquiry/Biology* |
| Year B | **How are everyday objects made?**  *Scientific Enquiry/Chemistry* | **Living things and their habitats**  *Scientific Enquiry/Biology* | **How do rocks change over time?**  *Scientific Enquiry/Chemistry* | **Why do things happen?**  *Scientific Enquiry/Chemistry* | **Natural vs man made light**  *Scientific Enquiry/Physics* | **Why are we alive?**  *Scientific Enquiry/Biology* |