Science – Two Year Cycle

	Teddy (Reception, Years 1 and 2)	Panda (Years 3 and 4)	Koala (Years 5 and 6)
Autumn Term Year 1	• Animals including humans (Y1) – identifying different animals and characteristics • Seasonal Changes (Y1) – identifying changes across the four seasons	• Forces and Magnets (Y3) – understanding of friction and magnetism • Sound (Y4) – how sounds are made and travel. Understanding of pitch and volume.	• Properties and Changes of Materials (Y5) – grouping materials by their properties, dissolving, filtering, sieving, evaporating, reversible changes, forming new materials • Forces (Y5) – gravity, effects of resistance and friction. Mechanisms.
Spring Term Year 1	• Everyday Materials (Y1) – identifying properties of materials and what they are made from • During the second half of term, pupils will undertake a scientific project which will focus on practical experiences for the children and enhancing skills in working scientifically	• Plants (Y3) – different functions of plants, requirements for life. The process of pollination. • Animals, including humans (Y3) – identify the human structure and what is needed to survive	• Light (Y6) – light travels in straight lines, how we see, shadows • Living things and their habitat (Y5) – life cycles and reproduction in animals and plants
Summer Term Year 1	• Plants (Y1) – identifying different plants and their structure	• Light (Y3) – understand light is needed to see, surfaces can be reflective, understand how shadows are created	• Animals, including humans (Y5) – changes as humans grow into old age. Changes in puberty.

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Autumn Term Year 2	• Living Things and their Habitats (Y2) – identify differences between living and dead things, understand different habitats • Animals, including humans (Y2) – understand the needs of animals and that animals have offspring	• States of Matter (Y4) – solids, liquids, gases. Heating and cooling. The water cycle. • Animals, including humans (Y4) - human digestive system, function of teeth, food chains	• Earth and space (Y5) – movement of the Earth and Moon. Rotation of Earth – day and night. • Electricity (Y6) – experimenting with circuits – changing components to create different effects. Circuit diagrams.
Spring Term Year 2	• Everyday Materials (Y2) – reinforce learning on materials from Year 1 and consider the suitability of materials for different uses • During the second half of term, pupils will undertake a scientific project which will focus on practical experiences for the children and enhancing skills in working scientifically	• Electricity (Y4) – start constructing simple circuits. Understand materials which conduct electricity • Rocks (Y3) – understand how rocks are created and the varying types	• Living things and their habitats (Y6) classification of plants and animals using different characteristics • Animals, including humans (Y6) – circulatory system, the heart, healthy living
Summer Term Year 2	• Plants (Y2) – understand how seeds grow into plants and what is needed to grow	• Living things and their habitats (Y4) – grouping and	• Evolution and inheritance (Y6) – changes to living things over time, fossils,

	• Review the learning for the year. Reinforce learning to fill any gaps in knowledge as necessary. There will also be the opportunity to learn more about famous and influential scientists.	classifying, recognising that environments change • Review the learning for the year. Reinforce learning to fill any gaps in knowledge as necessary. There will also be the opportunity to learn more about famous and influential scientists.	adaptability of plants and animals. Know that living things produce offspring • Review the learning for the year. Reinforce learning to fill any gaps in knowledge as necessary. There will also be the opportunity to learn more about famous and influential scientists.
Working Scientifically – these are reoccurring themes through all key stages	• Observing, identifying and asking questions • Performing simple tests • Gathering data • Suggesting answers	• Asking relevant questions • Setting up practical enquiries • Making systematic observations, use a range of equipment • Gather data and record findings • Report findings, draw conclusions • Use evidence to support conclusions	• Planning different types of enquiries to answer questions – control variables • Take measurements with increasing accuracy • Record data. Produce accurate graphs and tables • Use test results to make predictions • Present findings. Draw conclusions, causal relationships, degrees of trust • Use evidence to support or refute ideas and arguments

All references are to the national Curriculum units which are arranged in Year groups. Please refer to the NC for exact details of each unit.

Notes

All topics identified above are taken from the Science National Curriculum document. Please refer to the statutory requirements for each topic covered. Please also see science, curriculum mapping document and skills progress for working scientifically.

Our science curriculum aims to engage children in developing a love of science. They achieve this by being exposed to a range of topic areas and having the opportunity to see science first hand through scientific enquiry, school visits and using the local environment to support learning, not least taking in to account our rural setting. This approach supports our disadvantaged and SEN pupils through exposure to a range of experiences. The taught curriculum also has an emphasis on building knowledge which will allow pupils to develop cultural capital. The mixed age structure means there are opportunities for reinforcing knowledge and for pupils of different ages to learn from each other.

In all topics covered, scientific enquiry should play a key part and there should be developmental progress seen using the statutory requirements identified in the National Curriculum for Science. Teachers should be mindful of the age of the pupils and ensure the skills being taught are appropriate (pupils from different phases may be able to complete the same investigation but the expectations on their scientific enquiry skills may be different – see skills development document for age appropriate outcomes).

Another aspect of our science curriculum, is the opportunity to look at the life and work of key scientists. Most of these will be linked directly to the topic areas, but there will also be opportunities to look a key figures and their work as stand alone lessons or linked to other areas of study such as history. As an example, the work of John Snow in identifying causes of Cholera in Victorian London.

The mixed age classes will always present a challenge. KS1 topics are covered in Teddy class but Reception children are also able to dip in and follow up through the early years curriculum (knowing that these topic areas will be repeated when they are in Year 2). Panda class will cover lower KS2 topic areas while Koala will cover upper KS2. At all points, there needs to be some level of flexibility to allow for full coverage and knowledge development.

There are opportunities across the curriculum to revisit and reinforce knowledge. Most topics are repeated, albeit with a different focus each time. However, it does give opportunities to check prior knowledge and adapt future planning to ensure previously taught concepts are secure. Without this secure knowledge, pupils may struggle as they move through more complex topic areas.

As you will note, during the second half of the summer term, time is put aside to revise scientific content from the earlier topics. The exact content will be based on the class teacher's ongoing assessment and use of quizzes and retrieval practice. This helps pupil knowledge to become embedded in the children's long term memory.

Teddy Class – The focus of science should be enabling the children to experience and observe science around them. They will be encouraged to be curious and ask questions. They should be supported to develop their own understanding of scientific ideas and start using the appropriate scientific language. Reception children should work towards the appropriate Early Learning Goals when undertaking these topics. Year 2 topics will reinforce the learning which took place in Year 1 of the cycle. For those joining the school in Year 2 of the cycle, the learning and knowledge will need to be adapted accordingly to meet their needs and prior experiences. During the spring term, Teddy class will undertake a science project designed to enrich their learning and build their investigative skills. The projects will be based on using the local environment as an extended classroom.

Panda Class – In Panda class there will be a strong emphasis on reinforcing the scientific knowledge gained in the KS1 units. The teaching will now extend this learning further and start introducing more specialist topics such as forces and magnets, sound and rocks. There should be greater opportunities to deep dive in to these subject areas and secure high levels of enthusiasm for science and scientific enquiry (which should be an integral part of the learning process). There should be increasing opportunities to build knowledge through scientific enquiry and children should learn to skills of recording their work along with being able to make predictions and draw conclusions. Year 2 of the Panda class cycle allows some topics to be revisited. While topics are suggested, this may be dependent on the needs of the class. It may also be possible to undertake some introductory work on Koala topics.

Koala Class- Most subject areas covered in Koala have been previously taught in some form. Teaching in Koala should build on their prior knowledge and take the children further in their scientific knowledge in preparation for secondary school. The accumulation of scientific knowledge over time should support the children in working at an increasingly high standard. There should be a strong emphasis on experimental and investigative work and the children should develop their knowledge of how to make reasoned predictions, record and present their work (including the use of accurately drawn tables and charts) as well as drawing conclusions. Planning of units for Year 6 pupils who have been in Koala class for three years should be carefully considered. The children will have previously covered these units when they were in Year 4. The previous knowledge should be reinforced but with a clear emphasis on the Year 6 expectations. If necessary, topics that have had less coverage such as Earth and Space and Evolution (which is also covered through RE) should be revisited and approached from a different angle or perspective. It may be appropriate for children to produce a longer term project on topics such as Earth and Space to build on their accumulated knowledge. Pupils should leave Year 6 with a deep knowledge and love of science which supports them in being curious and inquisitive learners. They will have accumulated a good level of scientific cultural capital.