SCIENCE

Intent, Implementation and Impact Statement

INTENT

St. Andrews' Science curriculum aims to develop a sense of excitement and curiosity about natural phenomena and an understanding of how the scientific community contributes to our past, present and future. We want pupils to develop a complex knowledge of Biology, Chemistry and Physics, but also adopt a broad range of skills in working scientifically and beyond. The scheme of work is inclusive and meaningful, so all pupils may experience the joy of science and make associations between their science learning and their lives outside the classroom. Studying science allows children to appreciate how new knowledge and skills can be fundamental to solving arising global challenges. Our curriculum aims to encourage critical thinking and empower pupils to question the hows and whys of the world around them.

Our scheme encourages:

- A strong focus on developing knowledge alongside scientific skills across Biology, Chemistry and Physics.
- Curiosity and excitement about familiar and unknown observations.
- Challenging misconceptions and demystifying truths.
- Continuous progression by building on practical and investigative skills across all units.
- Critical thinking, with the ability to ask perceptive questions and explain and analyse evidence.
- Development of scientific literacy using wide-ranging, specialist vocabulary.

St. Andrew's Science scheme of work enables pupils to meet the end of key stage attainment targets in the national curriculum and the aims also align with those set out in the national curriculum.

INTENT

Here at St Andrew's we intend to deliver a high-quality science education that creates opportunities for children to build their foundations towards understanding the world. We intend to teach a stimulating and a thought-provoking curriculum, which allows pupils to take ownership of their learning. Children are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about the natural phenomena. As our children progress across the school

We understand that science can't solely be taught in a classroom and that children must experience science first hand in the real world. Science is huge. It has changed our lives and is vital to the world's future prosperity. We aspire for our pupils to have strong scientific knowledge, methods process and uses of science.

Through the Science curriculum our I-ASPIRE values can be covered and supported through the following.

Independence- children independently applying skills to construct and carry out practical investigations which will enable to explore the world and consider the signifies of the outcomes.

Ambition- take risks in their learning, develop curiosity and to have an enquiring mind about Science and the world.

Self-control– Children can demonstrate this by carring out fair testing, measuring amounts accurately and recording data correctly.

Perseverance- Trialing techniques and skills and being reflective about what has been successful and what needs further development. To find solutions when investigations go wrong.

Integrity- Doing the right thing when no-one is watching. Supporting others with collaborative opportunities within Science, being reflective and supportive.

Responsibility- Being a model citizen, contributing and understanding all actions have consequences. Working collaboratively, during science investigations. Pupils will take care of the equipment they used and ensure it is used in the correct manner.

Empathy- Understanding the views and beliefs of others. Learning about the work of a range of scientists, crafts makers and designers, describing similarities and differences between practices and disciplines and making links to own work. How

IMPLEMENTATION

In order to meet the aims of the National curriculum for Science and in response to the Ofsted Research review into Science, we have identified the following key strands:

- Scientific knowledge and understanding of:
  - Biology - living organisms and vital processes.
  - Chemistry - matter and its properties.
  - Physics - how the world we live in 'works'.

● Working scientifically - processes and methods of science to answer questions about the world around us.

● Science in action - uses and implications of science in the past, present and for the future.

St. Andrew's Science scheme is a spiral curriculum, with essential knowledge and skills revisited with increasing complexity, allowing pupils to revise and build on their previous learning. A range of engaging recall activities promote frequent pupil reflection on prior learning, ensuring new learning is approached with confidence. The Science in action strand is interwoven throughout the scheme to make the concepts and skills relevant to pupils and inspiring for future application. Cross-curricular links are included throughout each unit, allowing children to make connections and apply their Science skills to other areas of learning. Each unit is based upon one of the key science disciplines; Biology, Chemistry and Physics and to show progression throughout the school we have grouped the National curriculum content into six key areas of science: Plants Animals, including humans Living things and habitats Materials Energy Forces, Earth and space. Pupils explore knowledge and conceptual understanding through engaging activities and an introduction to relevant specialist vocabulary. As suggested in Ofsted's Science research review (April 2021), the 'working scientifically' skills are integrated with conceptual understanding rather than taught discretely. This provides frequent, but relevant, opportunities for developing scientific enquiry skills. The scheme utilises

IMPACT

The impact of St. Andrew's Primary's Science scheme can be constantly monitored through both formative and summative assessment opportunities. Each lesson includes guidance to support teachers in assessing pupils against the learning objectives and any relevant scientific enquiry skills. Furthermore, each unit has a unit quiz and a knowledge and skills catcher, which can be used at the beginning and/or end of the unit to provide a summative assessment. Opportunities for children to communicate using scientific vocabulary will also form part of the assessment process in each unit. After implementing St. Andrew's Primary Science, pupils should leave school equipped with the requisite skills and knowledge to succeed in key stage 3 Science. They will have the necessary tools to confidently and meaningfully question and explore the world around them as well as critically and analytically experiencing and observing phenomena. Pupils will understand the significance and impact of Science on society. The expected impact of following the St. Andrew's Science scheme of work is that children will:

- Develop a body of foundational knowledge for the Biology topics in the National curriculum: Plants; Animals, Including Humans; Living Things and Their Habitats; Evolution and Inheritance.
- Develop a body of foundational knowledge for the Chemistry topics in the National curriculum: Everyday Materials; Uses of Everyday Materials; Properties and Changes of Materials; States of Matter; Rocks.
- Develop a body of foundational knowledge for the Physics topics in the National curriculum: Seasonal Changes; Forces and Magnets; Sound; Light; Electricity; Earth and Space.
- Be able to evaluate and identify the methods that 'real world' scientists use to develop and answer scientific questions.
- Identify and use equipment effectively to accurately gather, measure and record data.
- Be able to display and convey data in a variety of ways, including graphs.
- Analyse data in order to identify, classify, group, and find patterns.
- Use evidence to formulate explanations and conclusions.
- Demonstrate scientific literacy through presenting concepts and communicating ideas using scientific vocabulary.
- Understand the importance of resilience and a growth mindset, particularly in reference to scientific enquiry.
- Meet the end of key stage expectations outlined in the National curriculum for Science.

IMPACT

At St. Andrew's we assess the impact of the children's learning through summative and formative assessment. We use compass to monitor pupils skills, knowledge and progression. As well as this, we use a retrieval approach revisiting sticky knowledge to ensure pupils learning is retained and pupils have a secure understanding of their learning.