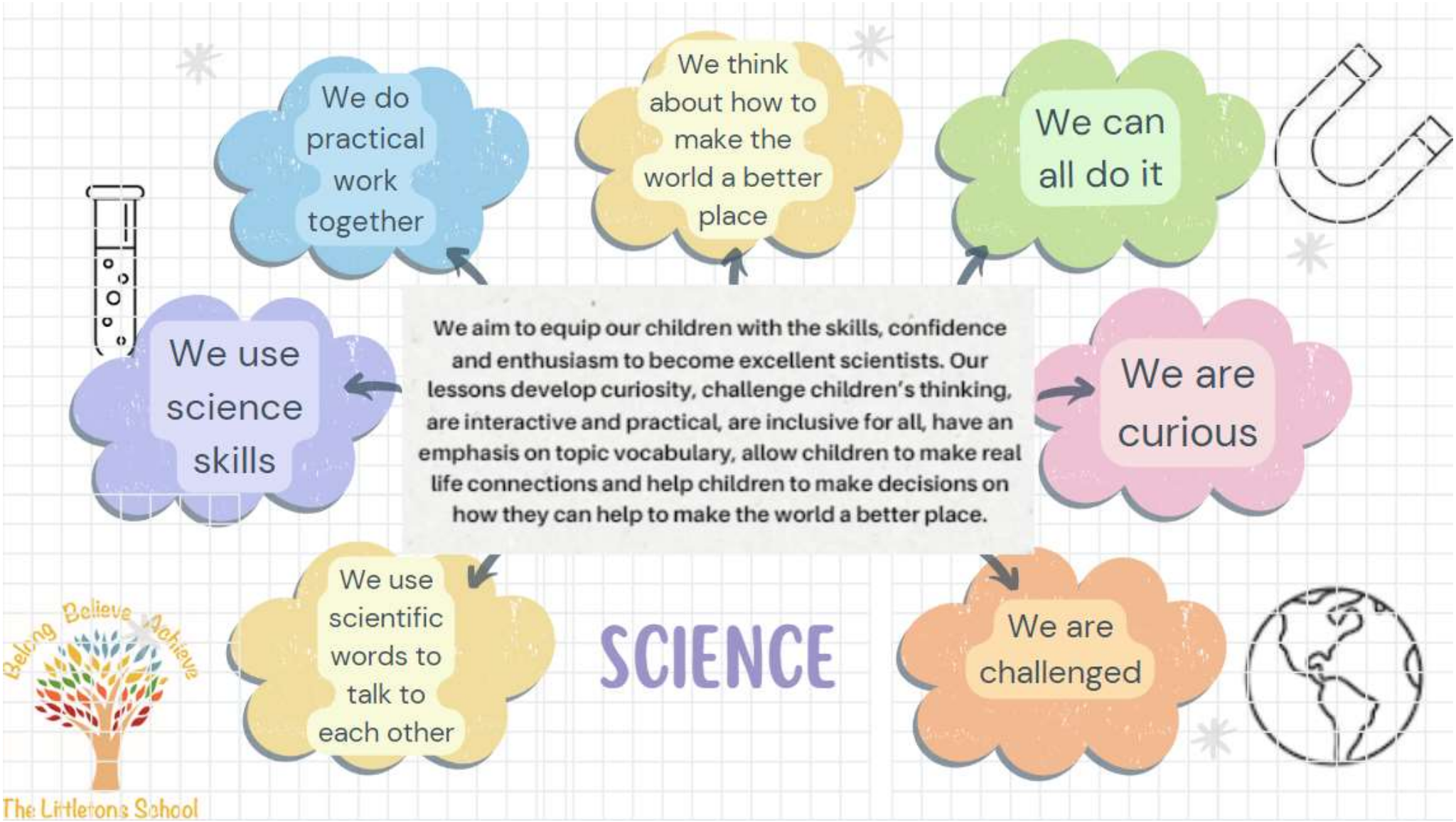
Curriculum Statement – Science

At The Littletons, our whole curriculum is underpinned by our school vision:

"Just as God has created every individual with unique talents and skills, our school community provides a nurturing and inclusive environment, where everyone is encouraged to explore their individual creativity and to confidently use their talents in order to achieve their God given potential and to make the world a better place."

Our curriculum fulfils the National Curriculum requirements.

Intent:


We do practical work together
We think about how to make the world a better place
We can all do it
We use science skills
We aim to equip our children with the skills, confidence and enthusiasm to become excellent scientists. Our lessons develop curiosity, challenge children's thinking, are interactive and practical, are inclusive for all, have an emphasis on topic vocabulary, allow children to make real life connections and help children to make decisions on how they can help to make the world a better place.
We are curious
We use scientific words to talk to each other
SCIENCE
We are challenged
Belong Believe Achieve
The Littletons School

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.

Kapow Primary'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 practical activities that aid in the progression of individual skills and also provides opportunities for full investigations.

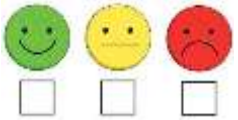
Each year group has an optional exploratory 'Making Connections' unit that delves beyond the essential curriculum, assimilating prior knowledge and skills to evoke excitement and to provide an additional method of assessing scientific attainment. Lessons incorporate various teaching strategies from independent tasks to paired and group work, including practical, creative, computer-based and collaborative tasks. This variety means that lessons are engaging and appeal to those with different learning styles. In Year 1, we have tried to ease the transition into Key stage 1, by providing a selection of activities: some adult-led, some independent tasks, and some tasks that can be used during continuous provision to suit your set-up. Guidance for adapting the learning is

available for every lesson to ensure that all pupils can access learning, and opportunities to stretch pupils' learning are available when required. Strong subject knowledge is vital for staff to deliver a highly effective and robust Science curriculum. Each unit of lessons includes multiple teacher videos and resources to develop subject knowledge, target fundamental misconceptions effectively and support ongoing CPD. Kapow has been created to build confidence amongst non-specialist primary teachers who are required to deliver and assess the full Science curriculum and maximise pupil progression. Videos created by subject specialists feature troubleshooting advice for practical work that does not go to plan, suggested questioning and support for tackling misconceptions, as well as recordings of practical tasks that can be utilised as demonstrations in the classroom or to support pupil reflection on their own observations.

In the Early Years, the foundations of science are taught through understanding of the world and developing a love for curiosity. There is a focus of exploration of science in the outdoor area.

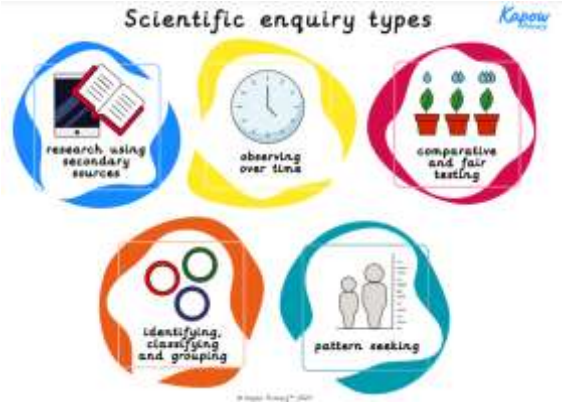
The key strategies that we use to deliver the science curriculum are as follows:

- We share and identify with the children the scientific skills that they are using each lesson to answer given questions/objectives. They are;

	observing 	measuring 	Posing questions 	predicting 	 planning
	 recording	grouping and classifying 	graphing 	 analysing and concluding	evaluating 

- Know and Remember – each unit is based around the children knowing and remembering key words and facts. KS1 are expected to remember three key words and facts for each unit and KS2 five key words and facts.

- The five different enquiry types are talked about in KS1 lessons and then as the children move into KS2 they are expected to identify the different enquiry types themselves when answering a given question. The Enquiry types are:



- In KS2 all children are given the opportunity to take part in weekly Farmer Time sessions where we make links with a farm and the children meet virtually with the farmer once a week and are able to ask questions.
- Each lesson is based around answering a given question. At the end of a science lesson the children are given the opportunity to answer the green question. They are also given time to think of anymore 'Burning Questions' they may have which follow on from the lesson.
- Teachers are given regular science CPD opportunities including Reach Out CPD, National College and staff meetings with the subject leader.
- To develop our children's Science Capital the children will all go on science trips (minimum of one every two years), will be offered the chance to join a KS1 or KS2 science club and when teachers plan, they identify and we actively encourage science visitors to come into school to support science teaching. Every year, we celebrate National Science Week.
- Strategies for supporting the learning of SEN children within Science can be found in the document:

Impact:

By the time children leave The Littletons, we expect them to:

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.

- 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.

Children's learning will be assessed through:

- The impact of Science is 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.
- Previous knowledge that the children have acquired is assessed at the beginning of each lesson in the Let's Start activity.
- Assessment grids. The children's science levels are recorded each half term showing whether they're working at, working towards or working above the intended learning outcomes.