

## SCIENCE

### Science Rationale

At St Michael and All Angels we are Scientists! We want our children to love science. We want them to have no limits to what their ambitions are and grow up wanting to be scientists, microbiologists, astronauts and even Science teachers! We want them to embody our core values. Our children will always strive to be "Ready, Willing and Able" to learn and develop. For example, our links with scientists at Jodrell Bank who inspired our Yr 5 pupils this year helped the children to see that anything is achievable living and learning in Kirkby! Bringing science alive in a modern, challenging and rapidly changing society is important at SMAAA!

### Intent

The science curriculum promotes curiosity and a love and thirst for learning. The art curriculum at SMAAA promotes curiosity and a love and thirst for learning. It is ambitious and empowers our children to become:-

*S-Sensitive M-Motivated A-Articulate A-Adventurous A- Adaptable.*

We want to equip them with not only the minimum statutory requirements of the science National Curriculum but to prepare. For example, our children in Key Stage 1 had the opportunity to have real experiences of animals and reptiles during their Animals Including Humans topics. This was then followed up by visits to Knowsley Safari where they further extended their learning linked to geography topics.

We want our children to use the vibrancy of our great city to learn from other cultures, respect diversity, co-operate with one another and appreciate what they have. We achieve this by providing a strong SMSC curriculum, with British Values and our core values placed at the heart of everything we do. This often feeds into the science curriculum. For example, when Yr 2 visited the Merseyside Spaceport experience when supporting their Space topic.

We enrich their time in our school with memorable, unforgettable experiences and provide opportunities which are normally out of reach - this piques their interests and passions. For example, the whole school also engages with local plastic pollution workshops linked to British Beach Clean Week and our South African Zero Waste project.

The science curriculum promotes creativity and an excitement for learning. It is responsive to the children's needs and is designed to support them along their individual school journey. The curriculum plans enable pupils to deepen curriculum knowledge whilst acquiring learning skills (powers) - like in all other curriculum areas.

We want to provide the children in St Michael and All Angels with not only the statutory requirements of the science National Curriculum but to prepare them for the opportunities, responsibilities and experiences of later life. As with other curriculum areas the intention of the school vision is to develop each child so they leave our school as confident and ambitious learners ready to contribute to the community.

### Implementation

In July 2019, a complete audit of the science curriculum was conducted. On the back of the findings from this audit, the science curriculum has been carefully built and the learning opportunities and assessment milestones for each year group crafted to ensure progression and repetition in terms of embedding key learning, knowledge and skills. We believe that our pupils need to be actively involved in making sense of their learning and therefore an enquiry approach was implemented, encouraging higher-order thinking and allowing our children to explore in a way that is meaningful to them.

Within each year group, science strands are revisited in a progressive manner. For example, when encouraging an understanding of biology, Year 1 focus on plants and how they grow. This understanding of our biology and plants develops through the year groups of year 2, 3 and 4 with knowledge deepening and investigations becoming increasingly child led.

Staff also receive specialist INSET training during staff meetings. These Master Classes support their understanding of and develop their own skills. Initially pupils take inspiration from current and historical scientists to help generate ideas. They explore and practice the practical skills and techniques involved in the topic. They use their professional diary to record their observations and to review and revisit ideas before producing a final piece. Each discipline is taught and re-visited in each phase, at a progressively deeper level.

Science subject specific characteristics, which we expect the children to demonstrate, have been developed and shared with all stakeholders. These characteristics underpin all work in geography and form a focal point for display areas and provide a common subject specific vocabulary for staff and pupils. These characteristics of a love of science includes:

- A passion for science and its application in past, present and future technologies
- Have the ability to think independently using learning powers and raise age related questions about working scientifically and the knowledge and skills that it brings
- Have excellent scientific practical skills, taking the initiative in for example, planning and carrying out scientific investigations
- gather and record data to help in answering questions.
- report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.
- Work in a variety of situations including fieldwork

We empower our staff to organise their own year group curriculums under the guidance of our subject leaders. Teachers are best placed to make these judgements. Staff develop year group specific long-term curriculum maps which identify when the different subjects and topics will be taught across the academic year. The vast majority of subjects are taught discretely but staff make meaningful links across subjects. They link prior knowledge to new learning to deepen children's learning.

Our short-term plans are produced on a half-termly and weekly basis. We use these to set out the learning objectives for each lesson, identifying engaging activities and resources which will be used to achieve them.

We encourage staff to teach a weekly science lesson. This helps to ensure sufficient time is allocated to science and that scientific subject matter can be revisited frequently. We believe that by crafting our curriculum this way, we improve the potential for our children to retain what they have been taught, to alter their long-term memory and thus improve the rates of progress they make.

## Impact

We use formative assessment from each lesson to inform future planning. This helps us provide the best possible support for all of our pupils, including the more able. The milestones for each phase have been carefully mapped out and further broken down for each year group. This means

that skills in science are progressive and build year on year. A child led topic allows children to drive their own learning and flourish into other areas of the curriculum not covered by the statutory guidance.

Assessment information is collected frequently and analysed as part of our monitoring cycle. This process provides an accurate and comprehensive understanding of the quality of education in science. Monitoring of assessment is carried out at the conclusion of each half-term once a topic is concluded. The Working Scientifically milestones are reviewed at the end of the Autumn, Spring and Summer terms to analyse progress.

Monitoring in science includes: book scrutinies, lesson observations and/or learning walks, pupil/parent and/or staff voice.

All of this information is gathered and reviewed. It is used to inform further curriculum developments and provision is adapted accordingly.

A comprehensive monitoring cycle is developed at the beginning of each academic year. This identifies when monitoring is undertaken. The last science monitoring took place during the Summer term 2019. Monitoring in science includes: book scrutinies, lesson observations and/or learning walks, pupil/parent and/or staff voice.

All of this information is gathered and reviewed. It is used to inform further curriculum developments and provision is adapted accordingly.

The next science monitoring session will be Autumn 2019

*At SMAAA our children are scientists.*

The logo for SMAAA Primary School is a large, semi-circular emblem. It features a yellow background with a purple border. Inside the circle, there is a stylized purple figure that resembles a person or a character. The words "PRIMARY SCHOOL" are written in a light purple, sans-serif font across the middle of the circle.

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Able*

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