Science Curriculum Rationale 2022-23

The Science curriculum that we deliver allows our pupils to know that science is the way in which we gather information about and develop our understanding of our universe and everything that is in it. We develop the concept that information relating to our world and its contents has been investigated and tested - and this is what constitutes our knowledge of the world. We encourage pupils to realise that scientific knowledge is constantly changing and that they can contribute to scientific discoveries.

Curriculum Intent

Through science we encourage our pupils to work collaboratively and as individuals; to think analytically, creatively and methodically; to communicate and present their ideas in various forms; to understand the three specific disciplines of chemistry, biology and physics; to understand the uses and implications of scientific knowledge. We use science to promote the pupils’ vocabulary and develop their spoken language.

Curriculum Implementation

The science curriculum is reviewed in the Summer term of each academic year in readiness for the following year. Learning opportunities are fine-tuned and the Subject Lead works with the Senior Leadership Team of school to identify progress milestones across the various strands of the subject. Teachers ensure progression by repetition of key skills to embed key learning and subject knowledge. During the teaching of topics and interwoven throughout the science curriculum, we embed the necessary skills for our pupils to work scientifically. We introduce our pupils to scientific concepts in EYFS, most noticeably through the following areas of learning: Communication and Language; Personal, Social and Emotional Development; and Understanding of the World. In Year 1 we teach pupils to: observe closely using simple equipment; identify and classify groups; and ask simple questions. Building up to Year 6 by which stage pupils have been taught to: plan scientific enquiries to answer questions, including control of variables; take measurements using a range of equipment with increasing accuracy and precision; record data and results using diagrams labels, keys graphs and bar charts; use results to make predictions; report and present findings; and identify evidence that supports or refutes ideas/arguments.

Further proficiencies that we want to embed are:

* An enquiring attitude.
* [Good problem solving skills](https://successatschool.org/advicedetails/600/How-can-problem-solving-help-me-at-work%3F).
* Ability to think logically and methodically.
* [Strong communication skills](https://successatschool.org/advicedetails/605/How-to-Improve-Your-Communication-Skills-For-Work).
* A methodical approach to work.
* Research and analytical skills.
* Attention to detail.
* Determination and [adaptability](https://successatschool.org/advicedetails/735/adaptability-skills).
* Able to work independently.
* [People skills](https://successatschool.org/advicedetails/667/How-to-improve-your-people-skills-for-work), such as team-working ability and having an open mind.
* Creativity.

Curriculum Impact

Formative Assessment is carried out by a combination of “walking the class” during lessons to address misconceptions early, end of topic quizzes, knowledge organisers, (age appropriate) extended writing or any other way of capturing what a child has learnt and can remember from their curriculum. Assessment is undertaken to ascertain subject knowledge, skills, understanding of scientific concepts and recall of information to measure whether a pupils is ready to progress, needs support to progress or to identify barriers that are preventing students from making progress. Assessment doesn’t just test a pupil’s substantive knowledge, but gauges their disciplinary knowledge.

Our science curriculum aims to inspire our pupils to become scientists and develop their understanding that the field of science is huge with many different roles in the job market. We want to encourage aspirations so that pupils can identify the skills and characteristics that they need, whether it be working with animals, rocks or exploring the universe.

Many science graduates go in to the following jobs:

* **Biologists**study living things like plants and animals.
* [**Chemists**study chemicals](https://successatschool.org/advicedetails/190/Why-Study-Chemistry%3F).
* **Research scientists** do experiments and investigations into different things.
* [**Physicists** explore why matter and energy behave the way they do](https://successatschool.org/advicedetails/224/Why-Study-Physics%3F).
* **Forensic scientists** help to investigate crimes by gathering and analysing evidence.
* **Food scientists** study elements of food and help make food products.
* **Astronomers**explore the origin and structure of the universe – that includes stars, planets and dark matter.
* **Nuclear engineers**research nuclear energy and radiation.
* **Meteorologists**observe and analyse weather conditions. [Read this to find out how to become one](https://successatschool.org/advicedetails/752/life-as-a-meteorologist).
* [**Agriculture & Environment**](https://successatschool.org/careerzonesummary/40/Agriculture-Environment): agricultural engineer, geologist, ecologist, archaeologist, seismologist, botanist.
* [**Animal Welfare**](https://successatschool.org/careerzonesummary/45/Animal-Welfare)**:** veterinary surgeon, zoologist, pet behaviour counsellor.
* [**Engineering**](https://successatschool.org/careerzonesummary/2/Engineering): chemical engineer, aerospace engineer.
* [**Police, Security & Emergencies**](https://successatschool.org/careerzonesummary/38/Police-Security-Emergencies): scene of crime investigator, fingerprint officer.
* [**Sport & Fitness**](https://successatschool.org/careerzonesummary/32/Sport-Fitness): sports scientist.
* **Doctor or Dentist**: looking after people and keeping them healthy