



NICHOLAS POSTGATE  
CATHOLIC ACADEMY TRUST

# Science

Curriculum Intent

## Rationale

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

NPCAT's science curriculum is designed to ensure that from the moment each of our pupils set foot into our schools, we take their individual starting point and make sure we have mapped out their path through their entire time in school to prepare them for success when they leave us. Our science curriculum is therefore the **body of knowledge** we know our pupils need to learn as they progress from one year to the next. They need to **know more, remember more and do more** at each and every stage.

Our pupils are scientists who are developing a deeper understanding of the world around them. Units are planned to ensure progression of the body of core scientific knowledge from year 7 through to year 11, with subject specific vocabulary and skills mapped out for each unit so there is clarity for teachers, pupils and parents. Every unit has a practical aspect where pupils learn the scientific skills of making predictions, ensuring validity, analysing and evaluating results and drawing conclusions.

## The NPCAT Science Curriculum

- Ensures that all pupils make good progress irrespective of their starting point and those young people facing disadvantage are lifted from educational poverty.
- Promotes Catholic values, morality and ethics.
- Progressively provides pupils with the building blocks in small chunks of what they need to know for them to be successful in science.
- Is coherently planned and sequenced, utilising existing knowledge as the foundation from which pupils enjoy a growth mindset.
- Puts Literacy and Numeracy at the heart of the science curriculum and is the key to pupils becoming lifelong learners.
- Is aspirational for all pupils.
- It is broad and balanced for all pupils for as long as possible.
- Promotes the gain of science capital, making pupils aware of the opportunities in science for further study and careers.
- Puts practical skills at the forefront of learning with pupils progressing through the required skills in a logical manner.
- Provides opportunities for pupils to improve their independent learning skills and resilience are frequently given.

## Implementation – How do we teach what we teach?

The science curriculum is a continuous curriculum that runs from Year 7 through to Year 11. It provides pupils with the opportunity to realise their potential by providing breadth, depth, stretch and challenge, enabling pupils to develop their scientific knowledge and skills.

In order to master the content covered pupils must be made aware when they are learning content from specific topics and shown how it fits into the bigger picture. Pupils are introduced to the majority of topics gradually throughout Year 7 and Year 8 to allow them the opportunity to organise new knowledge in their long-term memory. All future knowledge gained throughout Years 9-11 will fall within these topics allowing a solid foundation to build on. Visual logos for each topic identify when each topic is being studied or referenced. To assist pupils move any new knowledge from their short and working memory and fix it permanently into their long-term memory, the curriculum is built around the concept of interleaving. Built into the curriculum are frequent opportunities to revisit previous topics and link content with previous work. New content is often presented in advance of when it is studied in depth to allow a more gradual introduction and reduce overload in working memory.

Lessons are taught with clarity, enthusiasm and pace. This will ensure that pupils are well-motivated which will lead to accelerated learning and ensure that practical investigative skills and knowledge are more effectively embedded. This will help to make pupils into lifelong and independent learners with the ability to think and work like a scientist.

The science curriculum enables pupils to apply their knowledge and skills to solve scientific problems. Pupils can organise their thought processes eloquently and confidently argue for or against concepts and theories using scientific knowledge and keywords. Practical skills are built up gradually and clearly identified to pupils when they encounter them.

Cross curricular links are made where possible, enabling pupils to see how different subjects share knowledge and skills and are then able to transfer these skills. The science curriculum provides opportunities for all pupils to develop a high level of literacy and numeracy required for success in adult life. Appropriate scaffolding and or challenge is in place for pupils to be able to write extensively about scientific knowledge and applications. Lesson keywords are identified every lesson and literacy checks carried out by pupils. Science staff will break down and explain science key words making them more relevant to pupil. The morphology and etymology of words will be used by science teachers to enable pupils to understand and use key scientific vocabulary.

Our science curriculum broadens pupils' horizons through a range of personal, health, social and economic opportunities. This is evident during the delivery of topics such as interdependence, genetic modification, maintaining biodiversity, sustainability, global warming, evolution, energy efficiency and stem cell research, but opportunities to promote PHSE are taken at every opportunity.

Interleaving and identification of the topics that students are learning is integral to the science curriculum.

Students will revisit previous content before continuing to develop a deeper understanding of a topic. Students will also revisit previous content when completing recall tasks, viewing GCSEPods, during revision sessions and when completing their cumulative assessments.

## What enrichment opportunities do we offer in science?

Pupils are exposed to opportunities of enhancing their learning outside of the classroom through educational trips, workshops and seminars. There is a NPCAT science Instagram account which provides additional information around careers, science facts and science in the news. NPCAT Aspire offers the opportunity to study additional science sessions delivered remotely by NPCAT science staff.

## How can the study of science support pupils beyond school?

The importance of the different science topics to wider life experiences is explicitly shared with students from the onset. Careers and post 16 opportunities in science are identified throughout the curriculum as well as identifying key scientists, science facts, inventions, theories and areas of scientific interest. Therefore, students understand the purpose of the learning and can see the relevance to their own experience, increasing their science capital.