

Statement of intent: purpose of study



“Our intent is to empower every student to live the Enfield Way, we want all our student to LEARN: Lead, Excel, Aspire, Resilient and Nurture. We teach Science simply because it is interesting, exciting and relevant to everyday life and enables every student to gain the knowledge and skills to make sense of the world around them (science literacy) and to become responsible global citizens.

Our broad curriculum enables Oasis Academy Enfield (OAE) students to develop the passion to work, progress and excel to the best of their ability. We follow the OCL Curriculum for Key Stage 3 (and Breadth and Depth for Year 9) and AQA Science Specification for Key Stage 4 as the literacy used is more suited for our students and enables us to tailor it more effectively to meet the needs of all our students, in particular the most disadvantaged and those with special educational needs and/or disabilities (SEND) or high needs.

Our curriculum follows a five-year plan from Year 7 to Year 11. It is coherently planned and sequenced with sufficient knowledge and skills to build on the prior knowledge in Science from Key Stage 2.”



Statement of intent: Our three C's



Character:

We develop students' character through warm teacher – student relationships and a balance of teacher exposition and dialogic discussion while we explore the human capacity to explain the material world. We work to enable students to be joyful at the wonder of the universe and our capacity to understand it, humble about our place within nature and hopeful about societies capacity to overcome the ecological crisis they have inherited.

Competence:

We develop our students' competence through a curricula model that starts from students' existing knowledge of the world and gives them the experiences and explanations they need to develop a more scientific understanding. We have structured our curriculum so that students build up their sense of the key concepts gradually through being exposed to them in a range of contexts developing their ability to recognise the power of a small number of big ideas to explain a wide range of phenomena. By doing this we aim to create students who can retain a wealth of scientific knowledge they can use flexibly in and beyond the classroom.

Community:

Our curriculum moves back and forwards between developing students' core knowledge of science and applying it to the major issues affecting the planet – climate change, biodiversity loss and the impact of pollution. By enabling students to relate their knowledge to these issues and make sense of the enormity of them we leave our students with the knowledge and skill they need to understand the issues and a deep sense of hope that science provides us with the potential to change and transform our world for the better.



Statement of intent: principles of progression

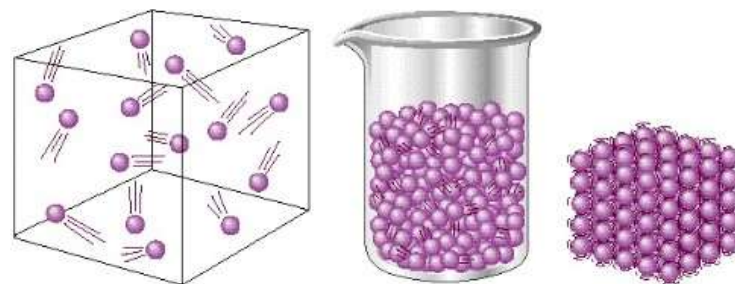


Core concepts and principles of progression

Our curriculum is designed to ensure that our students are **knowledgeable**. This is made up of substantive and disciplinary knowledge. Our curriculum is **well sequenced** so that students learn the most **fundamental knowledge first**, laying the foundations on which all other understanding rest. Over their science education, students will build on this knowledge in order to gain a deeper understanding of the **big, overarching ideas** in biology, chemistry and physics. Our core concepts are:

- **Secure Substantive Knowledge:** we believe that if they have secure **substantive knowledge, they will feel confident in explaining the key scientific principles that govern everything that occurs** within our universe. Concepts are revisited throughout their curriculum to ensure that fundamental knowledge is mastered first and then developed throughout the schemes of learning.
- **Develop Disciplinary Knowledge:** we also want to ensure that students have mastered the disciplinary knowledge – they understand how to be '*a scientist*'. We feel it is important that this is taught alongside the substantive knowledge so that students understand how substantive scientific knowledge has been developed over time.
- **Secure subject specific literacy:** We want to ensure that student are equipped with a wide range of scientific vocabulary, an understanding of how scientific ideas are presented and communicated and an opportunity to engage in scientific literature within the curriculum and at home so that they are able to communicate their ideas effectively.
- **Link the 'Big Ideas' in science:** over their science education, students will build on this knowledge in order to gain a deeper understanding of the big, overarching ideas in biology, chemistry and physics. From understanding that all material in the Universe is made of very small particles, to the concept that energy cannot be created or destroyed to the key ethical arguments governing science; knowledge is constructed and deepened from the foundations up.
- **Concrete examples and real life contexts:** students have the opportunity to practice application of knowledge and interact with modelled examples repeatedly so that we ensure it is flexible and that they can apply it to a range of different situations & scenarios both within the classroom and more importantly, their real lives.

Practical work: class practicals and teacher demonstrations are integrated into the curriculum so that it builds on and helps to enrich their substantive and disciplinary knowledge. Students complete work accurately and precisely in order to develop their procedural knowledge of the scientific method, giving deeper meaning to their understanding and providing students with the foundations to study science at a higher level.



Statement of intent: aims & outcomes



Equip all students with the **substantive** knowledge

Biology:

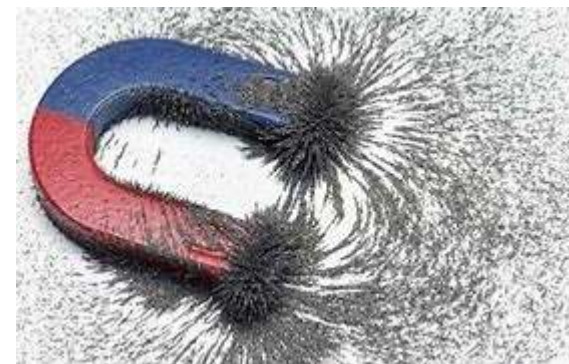
- An understanding of the structure, function and classification of living organisms (including microorganisms, plants and animals).
- That material and energy cannot be created or destroyed, simply converted from one form to another.
- That organisms are continuously interacting and depending on each other and that a change to one organism (including ourselves) can have a huge impact on others.
- An understanding of how we have developed as complex organisms including the inheritance of information and the evolution of organisms over time.

Chemistry:

- That all matter is created from particles, linking this to the properties, classification and uses of a substance.
- Knowledge of the structure of an atom, variation between atoms and changes that can occur to atoms.
- Understanding of the differences between physical and chemical changes and how these can be explained using the particle model.
- The key chemical reactions that occur, linking these to energy changes and the occurrence of these reactions in our personal lives and within medicine and industry.
- The development of the periodic table over time and the association between different elements and their properties linking to extraction and use.
- The composition of the Earth and our Atmosphere and how this is changing over time.

Physics:

- An understanding that the total amount of energy in the universe is the same but can be transferred from one store to another and the ability to identify and describe these transfers.
- Identification of forces acting upon objects and the impact of these forces on the objects (including their effect on their speed, shape and motion).
- Knowledge of waves including key properties, their ability to transfer energy and their effect and use in a range of scenarios.
- Understanding of the key properties of electrical circuits, how to measure these properties and how these properties are linked to each other.
- Knowledge of static fields, magnetism and electromagnetism and the uses of these phenomenon.
- Understanding of the magnitude of 'space' and the impact of different astronomical bodies on our lives.



Statement of intent: aims & outcomes



Ensure students have the **disciplinary** knowledge to be 'good scientists':

- **Knowledge of methods for answering scientific questions:** a secure knowledge of the different ways that scientists investigate scientific questions so that students will be able to decide on appropriate methods of investigation that will enable them to test predictions and evaluate scientific theories for themselves.
- **Knowledge of apparatus and techniques:** students will have experience of using a range of different pieces of apparatus and techniques so that they can decide on the most appropriate and evaluate their use in different scenarios in terms of safety, accuracy, precision and errors.
- **Analyse data:** students should be able to analyse data gathered or shared with them using a range of **mathematical techniques, tables and graphs**. **Discuss repeatability and reproducibility of findings and potential sources of error and bias so that they are able to discern between fact and error and justify and communicate their conclusions** effectively.
- **Apply mathematical concepts:** students will be able to apply mathematical concepts, conventions and skills to identify patterns and describe phenomenon quantitatively.
- **Use standardised units:** students will be able to use standardised units effectively and perform appropriate calculations.
- **Respectful conversation:** the curriculum will create a space for students to engage in respectful conversation around challenging topics which enables them to develop their understanding of the complexity of decisions made within the field of science and how scientific advances have had an impact on the future of our planet.
- **Continuously evolving:** students will understand that scientific theories, laws, models and methods change over time to take into account new evidence.
- **Impact of science on us, our local and global communities:** students should be able to explain the contribution of science to our **past and it's role in our future**. **They should be able to use their knowledge of science to make well-informed decisions that impact themselves and their local and global community and be able to communicate and justify these to those around them.**

