

The purpose of the Science curriculum is to develop our students' scientific understanding, so that they are scientifically informed members of the public and feel scientifically literate. If students want to pursue careers in Science, our curriculum will ensure they are fully equipped with the skills and knowledge to follow their aspirations to become researchers and scientists of the future.

Students at The Lowry Academy will understand key concepts and issues related to cells, ecology, biological reactions, inheritance, health and body systems, particles, atoms, the Earth, chemical reactions, chemical quantities, separating techniques, energy, waves, forces, electricity, magnetism and space.

Our curriculum outlines to students that scientists are needed in every walk of life and are not just limited to working in a laboratory. Our Science curriculum is inclusive and representative as we use a range of names, images and scientists in our resources to mirror the backgrounds and identities of all of our students.

The following principles have informed the planning of the curriculum:

- 1. Entitlement:** All pupils study the areas of Science that have been identified by the National Curriculum as a minimum. Here at The Lowry Academy, we have localised our curriculum to give our students a more contextualised understanding of the knowledge and skills we teach. For example, when teaching about waste management, we include examples of local businesses that carry out this work. We invite speakers from local companies in to deliver talks on what their aim is, and to provide information about careers within that area of work.
 - 2. Coherence:** Taking the National Curriculum as its starting point, our curriculum is carefully sequenced so that powerful knowledge builds term by term and year by year. We make meaningful connections within subjects and between subjects. For example, in Year 8, we introduce the Bohr model of the atom. This is an important part of the curriculum and is relevant to many different key concepts including particles, atoms, and chemical reactions. It is first introduced in Year 7 with 7CC Chemical Reactions. The Bohr model is then revisited in Atomic Structure and Periodic Table in Key Stage 4 Chemistry, as well as Atomic Structure in Physics, and is prerequisite knowledge for the next chemistry topic, Bonding, which in turn is foundational to many of the remaining chemistry units. The discovery of the atom is something that we champion here at The Lowry Academy, as Manchester has achieved great success in this field. We teach our students about The electron (JJ Thomson), proton (Rutherford) and neutron (James Chadwick) all being discovered by scientists that were either educated or born in Manchester.
 - 3. Mastery:** We ensure that foundational knowledge, skills and concepts are secure before moving on. Pupils revisit prior learning and apply their understanding in new contexts. We teach scientific concepts in KS3 and then build on this knowledge in KS4 to embed the skills and knowledge. The knowledge and skills that we continuously teach are assessed through daily review tasks, homework and weekly fluency tasks. We use a combination of all this to inform future teaching. Summative assessments are also completed at the end of each topic to identify misconceptions, and we use this information to build in re-teach opportunities.
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4. **Adaptability:** Our curriculum is adapted to enable all students of different abilities to access the full range of topics and skills that are taught throughout our curriculum. Each teacher will tailor the lesson delivery to ensure to suits the needs of their class. We use modelling throughout our curriculum as we feel this is the best way to explain complicated scientific concepts to our students. For example, when teaching chemical calculations, some students will need more scaffold and modelling than others. We have also adapted certain areas of our curriculum make cross-curricular links to local history. For example, we explore how Salford and Manchester contributed to The Industrial Revolution and the consequential impact to the local and global environment and economy. This then leads us on to explore the development of green energy in the local area.
5. **Representation:** All pupils see themselves in our curriculum, and our curriculum takes all pupils beyond their immediate experience. Our aim is for all students to believe that they could enter into a scientific career, if they wish to. Looking at the universities within our local area, there have been many discoveries and inventions that students can relate to. For example, graphene, the contraceptive pill and the first working computer all originated in our local area. We use this contextualised approach to inspire a love for Science within our students.
6. **Education with character:** Our curriculum is intended to spark curiosity and to nourish both the head and the heart. During Science lessons at The Lowry Academy, there will be several ethical and sensitive questions that arise. We encourage all of our students to express their views but also listen to their peers' views respectfully. For example, ethical topics that arise in lessons include the use of stem cells, fertility treatments and global warming.

In the Science department we explore possible careers linked to the curriculum to highlight that not all careers that are Science related are obvious. For example, formulations and purity is linked to the cosmetic industry. Additionally, the Science department provides many enrichment opportunities including STEM club, CREST award, outside speakers, workshops, trips to Science conventions, and research and innovation project opportunities. We are committed to providing these opportunities to extend our students knowledge beyond the curriculum, and allow them to develop their Scientific interests and talents.
