

When setting out the Science curriculum, our objectives are to encourage and support students to enjoy science as a subject, to take an interest in the topics they are learning and to be inspired to seek out scientific opportunities in their own time. Curiosity is a wonderful characteristic to keep hold of and we hope our students manage to do this whilst with us and in the wider world.

Another objective is to progress well in Science and achieve a level of knowledge that can be used to access Science at GCSE and/or Entry Level. At KS3 the student can build on previous knowledge, fill in gaps in knowledge due to a previously interrupted education and learn new topics. The programme of study then derives from the National Curriculum, which is modified to suit each individual student's interests and abilities. Topics, knowledge and skills will be delivered through both Project Based Learning and explicitly taught content.

Once on a pathway, the curriculum is sequentially organised working through the topics in order. Topics/vocabulary are repeated wherever possible to build up understanding and topics are regularly linked to relevant careers in order to raise aspirations and interest in the wider world.

The key areas in our Science curriculum are;

- Developing scientific knowledge and conceptual understanding.
- Developing an understanding of the nature, processes and methods of science, through different types of scientific enquiry that help them to answer scientific questions about the world around them.
- Learning to apply observational, practical, modelling, enquiry, problem-solving and mathematical skills, both in the laboratory, in the field and in other environments
- Developing students' ability to evaluate claims based on science through critical analysis of the methodology, evidence available and source of information.

### ***Content and sequencing***

For the teaching of science the KS3 National Curriculum is followed. Students are assessed on entry which enables us to fill in the gaps in knowledge that students arrive to our trust with, due to behavioral, SEMH or SEND, the priority is to re-engage and inspire students and prepare them for Entry Level and or science at KS4.

The pathways below are based on a full time offer of 25 hours unless medically certified otherwise, which most of our students benefit from. If required, students that need to be on a reduced timetable, receive a bespoke pathway to make sure they still have access to as much science education as possible and can still gain a qualification.

Teaching is extremely bespoke across the trust. Always in smaller groups than in mainstream settings, with a more relaxed environment and tailored to each individual's interests and abilities. This further supports the students to re-engage with the subject and be able to close the attainment gaps they have suffered before arriving at the trust.

## ***Overview of units of study across KS3***

Below details the National Curriculum

### **KS3 Science**

|  | <b>Topics to be covered.</b>  |
|--|---|
| <b>Year 7</b>  | <b>Cells and Organisation.<br/>The Periodic Table.<br/>Magnetism.<br/>Space physics.<br/>The impact of diet on health.<br/>Acids and alkalis.<br/>Forces.<br/>The skeletal and muscular systems.<br/>States of matter.<br/>Pressure in fluids.</b>                |
| <b>Year 8</b>  | <b>Breathing.<br/>Respiration.<br/>Motion and forces.<br/>Recreational drugs.<br/>Earth and atmosphere.<br/>Electricity.<br/>Photosynthesis.<br/>Sound waves.<br/>Light waves.</b>  |
| <b>Year 9</b>  | <b>Chemical reactions.<br/>Domestic energy.<br/>The human digestive system.<br/>Pure and impure substances.<br/>Reproduction.<br/>Inheritance, chromosomes, DNA and genes.<br/>Materials in the environment.<br/>Ecosystems.<br/>Energy change and transfers.</b> |
| <b>Across the curriculum – working scientifically.</b> | <b>Knowledge of science equipment and health and safety in the laboratory.<br/>The development of scientific thinking.<br/>Experimental skills and strategies.<br/>Analysis and evaluation.<br/>Scientific vocabulary, units, symbols and nomenclature.</b>       |

### ***Assessment and outcomes***

The curriculum is what we teach pupils and the assessment outcomes are how they show us that they have learnt this.

It is important that we assess students to identify what has been learnt, the skills that have been mastered and what needs to improve further. Most importantly, it guides and supports students

with the next steps in their learning. High-quality assessment can have a very positive impact on students' learning and progress.

It is taken into account that students attending our trust have missed significant amounts of their previous learning and will have gaps in their KS2 knowledge which may well have reduced their confidence and engagement in the subject. Therefore, the primary aim when meeting students is to re-engage and raise aspirations whilst also completing baseline assessments to make sure each student is put onto the most appropriate pathway.

Baseline assessments are in two parts;

1. Moderated written assessments.
2. Practical assessment to assess students' observational, problem solving and practical skills.

Throughout the course, two forms of assessment are used to track progress and inform practice;

**Summative assessments** take place at the end of a unit of learning, in the form of a written test or selection of past paper questions. The assessments are awarded, where possible, an Entry Level Certificate or GCSE level to track progress from the baseline.

**Formative assessments** take place every lesson either through immediate verbal feedback, written feedback on students' work and through self-reflection. Students' acquisition and understanding of new information and retention in the longer term are key foci when completing these assessments.

*Both of the above are used to regularly inform the practice of Science teachers and support staff across the trust. Different learning styles, adapted resources, the use of more links to students' lives and a plethora of other teaching techniques can be used to aid student's progress when any problems are quickly identified due to the robust assessment process detailed above.*

## **Science and the wider curriculum**

The Science Curriculum supports the teaching of British Values, SMSC and cultural capital along with supporting a Trust-Wide priority to raise the profile of reading skills and linking to careers and the understanding of life beyond education.

### **British Values and SMSC**

The Science Curriculum at The Raedwald Trust is packed with strands of SMSC and British Values, here are some examples;

- Role modelling respect and tolerance between staff and students.
- Clear rules for lab practical's and classroom behaviour.
- Listening to others' opinions.
- Learning to be responsible for our own health.
- Knowing where to go for reliable information and why we should question statistics.
- Learning to be environmentally aware and responsible and how our individual behaviour and the behaviour of the human race affects our environment.
- Questioning of how money is spent for scientific research
- Fostering a pride for all the scientific advancements, discoveries or breakthroughs that Britain is responsible for but also respect for amazing work in countries around the world.

All of the above is also factored into the **Unicef Rights Respecting Schools Programme** being run across the Trust, aimed at all staff members and students knowing their rights and how to respect the rights of others.

Sometimes, a natural conflict between Science and spirituality can occur and is dealt with sensitively with the neutral stance that we need to respect all others' views.

## **Cultural Capital**

As a Trust, we feel it is extremely important to raise our students' cultural capital in order to help them overcome any social disadvantage or adversity that they come up against. Also, to widen their horizons and raise their aspirations to have a bright and positive future. Within the Science Curriculum, there are ample opportunities to do this, such as going on school trips to the Zoo, the Science Museum in London, BT Martlesham and the Energy from Waste site. Also, in lessons, continuous discussion about the wider world and how any science topic can be related to a students' life in some way.

## **Reading Skills**

Reading Skills are consistently used and progressed within the Science Curriculum as detailed below;

- Researching online and reading a variety of information sources.
- New scientific vocabulary and definitions used regularly within lessons, questions asked about them and activities using them to aid retention.
- Reading and comprehension of practice exam questions and written exam style work.
- Reading topic fact sheets to answer questions.
- Reading scientific magazines and comics.
- Scan games, finding key information in a text.
- Word Walls for each year group, rotated to display all the current terminology for the topic being taught.

## **Links to Careers**

Every topic within the Science Curriculum can be linked to careers and this is done in a variety of ways, such as watching documentaries, discussing job roles, online research, reading magazines and newspaper articles and school trips as mentioned in the Cultural Capital section above.

- Health visitors
- Dieticians
- Surgeons and people who assist surgeons
- Electricity and electrics
- Research
- Transport design
- The space industry
- Genetic engineers
- Lab technicians
- Material science
- Food and flavoring industry
- Nurses
- GPs
- Consultants
- Paramedics
- Forensic Science

- Pharmaceuticals, Pharmacists and drug trails
- Sports Coaches

Strong links can also be made to careers in the Trust wide STEAM groups, that take the love of learning STEAM subjects and harness it into completing a wide variety of projects with aspirational outcomes.