Science Curriculum Intent at GCA

The science department believes in the potential of every child and works to develop the mind-set and skills necessary to be a successful learner. In the science department every student matters and we continually strive to help students achieve their very best through excellent learning and teaching and in a positive environment.
We strive to maintain a curiosity of the World around us through our engaging curriculum, and to promote skills of investigation, questioning, analysis, and experimental techniques.

The intent of the science curriculum at GCA is to:

- Learn substantive knowledge relating to the products and practices of science; through learning scientific facts about, for example cells and atoms, explain the material world and develop a sense of excitement and curiosity about natural phenomena
- Learn about practices of science to understand how scientific knowledge becomes established through scientific enquiry; through learning this appreciate how theories become facts, and how new evidence can affect previous theories.
- Appreciate the significance of science to society and our own lives, for example the development of medicines, understanding of immunity, and global challenges faced such as climate change
- ignite and nurture students' curiosity about the world in which we live and inspire awe and wonder
- give students the knowledge and information needed to understand their place in the world and the contribution they can make as a scientist and/or citizen of the future
- Ambitiously build upon the science learned at KS1 and KS2 in years 7, 8 and 9; ensuring that KS3 is well sequenced and suitably challenging, not allowing for any lost learning time
- Teach KS4 content throughout years 10 and 11 to allow for greater depth of understanding and more thorough teaching and learning; consolidating KS3 knowledge and skills thoroughly; allowing time for opportunities beyond the classroom
- Discover the prior and misconceptions our students may hold when they join us, and explicitly teach our students substantive knowledge as we understand that learning new knowledge depends on what is already known and is added to schemata within our memory. For our students to develop their knowledge and understanding of science it is important to have a correct foundation to build upon. In science students often hold their own ideas about how the world works and have their own theories to explain phenomena, which are not always factual.

  'Children develop ideas about natural phenomena before they are taught science in school. In some instances these are in line with what is taught. In many cases however, there are significant differences between children's notions and school science.' *Driver, R et al. 1994. Making Sense of Secondary Science*

  A study published in the American Educational Research Journal titled **The Influence of Teachers' Knowledge on Student Learning in Middle School Physical Science Classrooms** (Sadler. P et al. 2013), examined the relationship between teacher knowledge and student learning. The results showed that students learn more when their teachers not only know the content, but also when they can anticipate student misconceptions. It is therefore our intent for all our teachers to know

the content in depth and also common misconceptions, which are made explicit in our rigorously planned sequences of learning.

- Increase awareness with all our students of opportunities within the field of science both during and beyond their time at Garstang Community Academy. The students are aware of the contribution science has to many different aspects of life, including different jobs and career paths, to inspire our students to continue in their study of this subject and to discover and develop diverse interests and talents.
- Recognise that the world around us is ever changing; that the future of science and technology is an important field and will require adults of the future to be skilled and knowledgeable in this subject.
- Widen the horizons of our students, many of whom are from small rural communities.
  Our science curriculum raises the awareness of our students to bigger issues and inspires our students in the world of science, both for interest and to continue studying science when they leave GCA
- Regularly feature reading in our lessons so that our students read with confidence because in the science department we recognise that reading is important
- Explicitly teach tier three scientific vocabulary, exploring the etymology of science words and making links with every day vocabulary with the same word origins/stems to aid our understanding
- Teach key scientific concepts in a suitable order, so that subsequent learning builds upon what they have learn previously, and links between previous knowledge, future learning and different branches of science frequently occur, giving a well sequenced curriculum
- Regularly retrieve prior learning to embed knowledge and make regular links between the sciences when teaching, resulting in greater long term learning for our students.

Science is all about being curious, asking questions and trying to find answers. Our students are resilient; they take chances and are creative in their thinking. They are not afraid to take these chances, and to make theories based on evidence and draw conclusions. They make mistakes but learn from them; trying again, just like scientists before them.