



Curriculum Intent, Implementation & Impact

Our vision is to inspire curiosity about science and the natural world.

To develop students practical, critical and analytical skills, so they can make cognisant decisions in scientific contexts.

To promote the passion for scientific understanding and achievement to support their dreams for further education.

COURAGE
CONFIDENCE
CHARACTER



Science Department

Intent for KS3 and KS4 Curriculum

The aim of our Science curriculum is to enable students to know, apply and extend their scientific understanding around their personal world. We encourage our students to develop a positive and practical approach to science, developing their core substantive and disciplinary knowledge and skills. We combine knowledge with practical application and where possible highlight cross-curricular links, to promote a deeper understanding of the science around them during their school education and beyond.

Key stage 3 have 3 hours of science in years 7 & 8 increasing to 4 hours in year 9. This provides an opportunity to build on the skills, knowledge and understanding that students experienced at Key Stage 2 to support any gaps where opportunities have been missed using AQA Collins KS3 and KS4 as this highlights what students should know at the end of KS2, before exploring new areas of science with depth and breadth.

Key stage 3

- Our curriculum builds on the skills, knowledge and understanding experienced at Key Stage 2 to support any gaps where opportunities have been missed.
- We aim for our curriculum to set the foundation for KS4. We use AQA Collins 3 year curriculum program.
- We aim for students to confidently use and apply scientific language to their work.
- We aim to address scientific misconceptions.
- Our Science curriculum provides students with an understanding of key aspects and its contribution to cultural capital.
- Our Science curriculum provides students with an appreciation of subject integrity and interconnectedness so that they can build pathways for themselves that will enable them to explore and fulfil career aspirations.

Key stage 4

- All students follow the AQA Collins 5 year curriculum.
- Our 2 year Key Stage 4 allows the Science department to cover content in depth, provide practical practise and reinforce mathematical cross curricular links.
- Our KS4 curriculum aims to inspire student's philosophy, even if they have no ambition to work in the science industry, they will know the importance of science in their own lives.

- We aim to promote a love for learning and be an advocate for our students, so they aspire to achieve the highest grade possible.
- We aim to devise independent learning skills so our students are equipped for the world of work.

Our spiral curriculum supports retrieval practice, as we revisit and link all sciences together through a range of pedagogy activities, learning through modelling science, broaden their skill and understanding and practical's / project-based discoveries, which enables students to evaluate what they have learnt throughout each topic.

At KS4 all students will study key aspects of Biology, Chemistry and Physics through combined science or triple (higher and foundation tier). Science in Aylesford school focus on four aspects to support the students development, whilst promoting a broad, balanced and academically rich curriculum.

- Exploring (Students are looking into new content and develop language through identifying keywords and recall theories)
- Developing (Students will be able to use correct terminology and Describe key aspects of science)
- Securing (Students apply their knowledge through examples and explanations)
- Extending (Students can provide links and problems solve scientific enquires through analysis.)

We are confident that our Science curriculum contributes to students' academic and personal growth as they are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future as well as students' acquisition of cultural capital.

Students are taught substantive and disciplinary throughout the curriculum, developing their curiosity and overcoming challenges through character development, promoting the passion for scientific understanding and achievement and to support their dreams for further education.

Curriculum Implementation		
Curriculum Design	Curriculum Challenge	Assessment
<ul style="list-style-type: none"> • All lessons have a power of 3 retrieval that can be based on how the teacher plans to check student's prior knowledge. • Schemes of work are in-depth with a range of support for new teachers with lesson plans and suggestions for every lesson. • Resources cater for all ranges of abilities. • Practicals in KS3 are aimed to work scientifically to support thinking and learning development. • Lessons are structured to know, apply and extend knowledge. With extend is to deepen students thinking through either real life or problems that can occur in science. • Schemes of work are reviewed for gaps this is also aided via assessments and students' performances in practical's is it purposeful? If not, what do we need to do to make it purposeful. • We have teachers that are specialists in all areas Biology, Chemistry and Physics. Teachers are used to give breadth and depth in science curriculum especially through disciplinary learning. • Scientific language is key and is questioned by teachers. • Collaborative planning through all Key stages with KS5 being led by the teachers that are stake holders of the classes and share amongst each other to develop students learning. • CPD is external and internal with teachers on courses to develop subject knowledge and internal to aid learning in the class room such as practical's, pedagogy, purposeful feedback etc. 	<ul style="list-style-type: none"> • Students are asked questions and participate in activities from their starting point and to secure that knowledge and extend it through application and further extension of analysis. • Students are directed to write scientifically through describe, explain and analyse. • Students are to reflect the objective of the lesson and AFL is used to check if students have secured the objective before moving on. • High level of challenge for the most able: Are to critically think about how science can be improved or how it affects the world. Being able to explain and suggest development areas or what they could do to improve. Problem solving/trial and errors to the scientific theory or their own hypothesis. • Students attending STEM club and participate in school, local or national competitions. 	<ul style="list-style-type: none"> • Assessments are based through the broad curriculum offered to key stage 3 and AQA GCSE curriculum. Assessments are designed to check students knowledge, application and wider scientific knowledge of the curriculum that they have learnt. • Assessments are conducted when a breadth of the science topic is complete to evaluate students strengths and development areas • The assessment is evaluated to suggest what misconceptions there are, the use of language and the skills that each student needs to develop and also what the students do know. This is based on each individual and or a class for common misconceptions or depth of knowledge • To ensure information is stored in long term memory, the assessments are used to guide what adjustments need to be made to the curriculum. This enables us to revisit content that students struggled with, (diagnostic teaching) enabling them to secure and master those misconceptions and have deeper understanding than before.

Impact

- Students are aware of the importance of science in the world around them and the direct impact it has on their lives
- Student's curiosity to learn more about science has been promoted by linking to life and work base through critical thinking
- KS3 have a broader curriculum that allows them to explore science in depth and have projects to promote their own scientific ideas
- Students are continuing to develop lifelong skills through practical enquiry
- Students have gained the ability to analyse information and reflect on outcomes
- Increase the number of students applying for Further Education and Higher Education courses in scientific fields
- Students develop their strengths and close gaps in knowledge
- Opportunities for more students to achieve 7-9 grades through triple and combined science.

Cultural Capital

- Students are taught about key historical scientists throughout the curriculum.
- Students are taught about ethics when considering specific scientific practices, such as developing drugs and GM etc.
- Safe relationships, health, wellbeing and nutrition are also key topics covered.
- Consideration of religious and cultural viewpoints when discussing key scientific topics, including organ transplantation, contraception, stem cells etc.
- We relate our learning to industry as much as we can so that Science is applicable to real life contexts for our students.
- We study important and thought-provoking scientific ideas and theories including: climate change, Darwin's Theory of Evolution, stem cells, organ donations, Big Bang Theory and more.
- Current affairs discussions and possible future outcomes.
- Trips to zoo's, museums etc and guest's like indoor go-kart physics and science magic for engagement.
- Types of job opportunities in science, linking to hobbies or needs of science education to support application of future jobs. All discussed at appropriate times to help students think about their possibilities.
- Corridor displays showing unusual careers in science to encourage students to look further into their future.
- Information on women in science to encourage girls to engage in the science curriculum.
- Displays on cultural capital to cement how science affects and impacts student's life outside the classroom.

Promoting Equality and Opportunity

SEND and Provision for Disadvantaged

- Class Profile Sheets used to completed intervention
- Data analysis includes vulnerable groups
- Regular data analysis
- Modelling, scaffolding and adaptive teaching to aid all learners

Literacy

- Literacy embedded into marking policy
- Word bank for department
- Displays for learning
- Key word sheets available for all topics.

SMSC and British Values

- Relationships are crucial to teaching and learning: modelling of respect in lessons (how we speak and listen).
- Learning about different beliefs and values. Why science and religion may have different views but also link together for proof. Example Galileo theory of the planets
- In Science, we explore organ transplanted, Big Bang theory, medicine and we consider the ethics and cultural and religious perspectives.
- We teach about global topics including climate change, Biodiversity, population etc
- We teach students about healthy lifestyles including nutrition. We also teach about health relationships including family planning.

Leadership and Enrichment

- Opportunities in lessons for students to take defined leadership roles when engaged in group work; make presentations, practical work.
- Students rewarded as leaders by showing excellence in their subject and supporting peers around them.
- We reward success to students with excellent work or character.
- Opportunities beyond lessons to become a subject ambassador; provide support during Aylesford School open evenings and other opportunities through the academic year.