



SHIRLEY HIGH SCHOOL PERFORMING ARTS COLLEGE

Our Vision:

To develop aspirational learners who strive for excellence academically, creatively and culturally, benefitting from a wide range of opportunities led by inspirational educators.

SCIENCE DEPARTMENT

Context:

We have designed a curriculum that makes science a worthwhile educational experience for learners of all abilities. It integrates essential scientific skills and knowledge that will help our learners emerge into their increasingly technological future as confident citizens equipped with the right scientific literacy to make informed life decisions around matters of scientific importance.

Based on the findings by OFSTED with regards to the detrimental effects of a two-year KS3, we have changed our plan to incorporate Yr9 into KS3. With these changes, Yr9 will now focus on embedding the concepts learnt throughout Yr7-8 and also teach applications of scientific concepts to a higher level/unfamiliar situation.

Leaving two years for KS4 which will be used to introduce the more challenging concepts of secondary school science whilst also building on their foundational knowledge learnt through KS3.

A-Level is taught across two years to prepare learners for careers/university/apprenticeships.

Intent:

- Challenge
 - All lessons have 3 challenge questions linked to learning objectives
 - KS3: Challenge = Know, More challenge = Apply, Mega challenge = Extend
 - KS4: Challenge = Level 4, More challenge = Level 6, Mega challenge = Level 8
 - KS5: Challenge (C) = "Explain", More challenge (B) = "Apply", Mega challenge (A) = "Evaluate"
- Respect
 - The introductory Shirley Learner slide is up on the board as the teacher greets the learners at the start of the lesson to remind them of our Shirley values.
- Creative
 - Different activities, such as videos, role play activities, reading tasks, extended writing task which will promote lateral thinking and creativity.
- Compassion
 - Ethical discussions of the implication of scientific discoveries on the welfare of different individuals past/present/and future.
- Aspiration
 - External speakers to encourage and inform learners of how their current learning could be applied to a career. Different career paths linking to topical units are highlighted at the start of the unit.
- Diversity (texts and tasks)
 - Within Yr9, learners are introduced to the contributions made by BAME scientists to scientific discoveries.
- Relentless
 - Learners are encouraged to redraft and improve previous work to build a growth mindset.



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- High expectations
 - Lessons are designed to allow all learners to exceed expectations. The learner's targets are constantly revisited so that they are aware of where they are.
- Retrieval
 - Each lesson starts with three retrieval questions.
- Connections
 - The third slide "Why now slide" links current lesson to life outside of the classroom and also links to the curriculum map.
- Cultural capital
 - Trips and connections made between lessons and the wider social environment allow learners to build cultural capital.
- Develop and cultivate skills
 - On average there is at least 1 practical per lesson cycle where learners can demonstrate and improve their practical and critical thinking skills.

Implementation:

- Ideas
 - **Yr7 = "Novice"** Focuses on developing context and the general rules and laws of several scientific processes. It challenges students to develop an appetite to construct their own ideas that although deviate from the "rules" show extension of the scientific principles.
 - **Yr8 = "Advanced Beginner"** Increasing situational perception and competency. It challenges students to develop the understanding of causal effect and deliberate planning of scientific investigations.
 - **Yr9 = "Competent"** Applying their classroom science to the wider world and how their learning links with possible career options. It challenges students to communicate with the correct scientific keywords.
 - **Yr10 = "Proficient learner"** Take their KS3 knowledge and develop it further to become proficient in the subject. It challenges students to link KS3 ideas to higher level thinking.
 - **Yr11 = "Expert scientist"** Complete their GCSE studies and progress to their exams. It challenges students to apply their knowledge in an intuitive way to unfamiliar situations.
 - **A-Level** Preparation of application of scientific concepts learned throughout KS3-4 at a higher level that can be implemented at a career/undergraduate level.
- Methods
 - Firstly, the department ran an audit of suitability of the current courses/resources that were current at SHS.
 - The new OFSTED framework and curriculum were consulted to develop a template of what an outstanding science curriculum at SHS should look like.
 - Each KS leader then further developed a bespoke map that would allow challenge and progression of critical thinking skills.
 - A series of lesson templates were then produced by the department which would form the starting point of each lesson creation. These templates were checked by an independent consultant adept in the new framework and endorsed.



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- The department then delegated out the different lessons to be created to each member of the department with the aim of having the first term's lesson all completed by the end of the academic year.
- Lessons were quality controlled by PI, EI & SJ.
- Context
 - Sets are based on ability which are derived from the EOY assessments and mobile based on learner performance throughout the year.
 - Keeping in mind that most of the bottom sets will have a higher proportion of our SEN pupils, the lower sets have fewer students relative to the higher sets. The work is also differentiated within the sets and lessons (e.g. Challenge/More challenge/Mega challenge). Learners are encouraged to refer to the PLC's in order to not only track their progress but to have high aspirational targets both within each lesson and also for the end of year assessments.
 - Due to the high numbers of ethnic minorities that make up the school population, where possible, lessons have incorporated the contributions of BAME individuals to the pursuit of scientific knowledge.
- Feedback
 - 2 deep mark activities per half-term (assessment feedback/extended writing task) where learners are encouraged to not only view their strengths and weaknesses but actionable steps are given to allow learners to improve their work.
- Schemes of learning
 - Within the science shared drive, the quality checked lessons for each KS lesson are available as a starting point for each teacher who then adapts based on their class data.
- Long term learning
 - A lesson timeline is made available outlining the allocated number of lessons that each Unit contains. A marking timetable is also incorporated into this timeline to show when each extended writing task should be completed.
- Opportunities to recap prior learning (Retrieval)
 - Each lesson begins with 3 different retrieval questions from the previous topic.
- Extra-curricular
 - KS3 science club and science trips.

Implementation:

- Assessment
 - Each unit ends with a formative end of unit test and each half-term has a summative test.
- Homework
 - Weekly homework (Yr7-8, 10-11 Tassomai). Year 9 are given a homework pack. KS5 is a weekly teacher led homework activity.
- Independent task
 - All lessons contain independent tasks such as (past paper questions/ extended writing tasks) where learners are timed and encouraged to use their previous learning as scaffolding.



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- Work experience
 - Yr10s undertake work experience and students are aided with Science specific work experience where possible.
- Debates and presentations
 - Lessons with ethical debates are throughout each Key Stage.

Impact:

The success and impact of the curriculum will be evident through:

- Students achieving academic and scientific success that prepare them for the next stage of their educational journey.
- Student progress assessed through formative and summative assessments. In lessons assessment of progress through peer and self-assessment as well as PPE.
- Student work assessed through assessment tests, extended writing tasks, DIRT tasks, yellow box marking tasks
- Departmental bank of teaching resources and scheme of learning developed to show progression.
- Student progress over time tracked and recorded in a central area in the science shared area.
- Students feeling confident, valued, and successful; consistently showing respect for themselves and others as learners.
- Students able to demonstrate spiritual, moral, and cultural awareness of appropriate topical scientific issues.
- Students successfully making the expected progress to transition to the next year or next key stage.
- Students being able to work and learn in a high-quality teaching and learning environment.
- Students able to explain the progress they have made in science.
- Students having the opportunity to make contributions to lessons.
- Students to contribute to improvement in science engagement through student voice.
- Students show fluency when discussing their learning and making links as well as showing competency in practical skills.
- Students show empathy and respect to one another in lessons.

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We want all at SHS to believe in and maintain the values of our school:

