

Intent, Implementation and Impact: SCIENCE



Intent:

The purpose of education at Howard House is to equip young people with the knowledge and skills that will enable them to better understand the world around them; prepare them for adult and working life; develop cultural capital and interests that will help remove barriers to achievement; and become rounded citizens that are able to positively contribute to our changing society.

Our curriculum is founded on high expectations and increased opportunities for all students. It is our aim that students are accredited in all areas of study. For students in key stage 4, GCSE Trilogy is offered as a potential pathway in addition to Entry Level Science, which has sequential and incremental levels to maximise academic attainment and improve future opportunities.

At Howard House School we want to support our students overcome barriers that they face, developing problem solving and initiative. The curriculum will look to increase our student's life chances and provide them with the skills, knowledge and understanding that is needed to access better opportunities in further education, college, apprenticeships or/and work.

We know that Science education provides the foundations for understanding the world through the disciplines of biology, chemistry and physics. These disciplines impact our daily lives in several ways such as nature, plants and photosynthesis, health and lifestyle, electricity and other technologies. By modelling good scientific practice, through planning experiments with scientific rigour, and developing open minds, we encourage students to question the world around them and see how science impacts on their lives.

Our Science curriculum is designed to inspire and educate learners at all stages of their education, from aged 10-18. Each lesson is carefully adapted to respond to individual starting points and individual challenges. All students are provided with opportunity to access the National Curriculum.

Our curriculum is taught in a progressive and systematic way, as presented in our Long term and medium term plans. It builds on the knowledge acquired in KS2 and transition between Key stages is carefully considered. Any students with gaps in substantive or disciplinary knowledge, will be able to revisit areas to ensure they are working at the correct developmental stage.

We encourage independence in our students to enable them to carry out practical tasks that will not only enhance academic achievements but enhance transferable skills such as problem solving, organisation and boost their self-esteem.

Long term plans also highlight opportunities for students to revisit concepts and knowledge, links to RHSE, PD and mathematical opportunities (such calculating stopping distances and recording data), CEIAG, cultural opportunities and our Graduate Goals. Many of our students read at levels below their chronological age, opportunities are exploited, within teaching episodes, to encourage reading and care is taken to present text at the reading age of the student to increase independence and accessibility.

Implementation:

At Howard House, our science curriculum is implemented through structured and adaptive teaching methods, ensuring that students of all abilities and needs are supported in their learning journey. Science is taught four times a week for a period of 30 minutes each, providing consistent engagement and opportunities for students to develop scientific skills progressively. The focus is on delivering lessons that are engaging, hands-on, and

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aligned with real-world applications, helping students develop the scientific skills and knowledge required for future opportunities. Each student has the opportunity to experience a well-rounded science education, guided by individualized plans and assessments, enabling them to achieve their full potential.

Key elements of the implementation include:

- **Adaptive Teaching:** Lessons are carefully designed to respond to the specific needs of each student, ensuring that individual education plans (IEPs), academic starting points, and environmental needs are integrated into the learning experience. Differentiation strategies are employed, ensuring that students can access the curriculum at their level, whether through hands-on practical work, visual aids, or adjusted reading materials. Teachers consistently refer to student profiles, adapting resources and approaches to ensure accessibility and engagement.
- **Progressive Curriculum:** Science is taught in a systematic, progressive manner, ensuring that each year builds on the foundational knowledge acquired in previous key stages. Lessons are sequenced in line with our long-term and medium-term plans, which align with the National Curriculum. This approach ensures that gaps in knowledge from KS2 are addressed, with regular revisits of key concepts to reinforce learning and promote mastery. Students who have missed periods of education or who need extra support can revisit foundational content before moving forward.
- **Practical and Experiential Learning:** Science at Howard House emphasizes practical, hands-on experiments that not only support theoretical learning but also help develop essential skills such as problem-solving, teamwork, and independent working. Each lesson includes opportunities for practical tasks, where students plan, conduct, and evaluate experiments in a structured, safe environment. These activities are designed to enhance students' understanding of scientific principles while building transferable skills like organization, critical thinking, and data analysis.
- **Cross-Curricular Links:** Science lessons are designed to connect with other areas of learning, such as Maths, Reading, Personal Development (PD), and Relationships and Health Education (RHSE). For example, mathematical skills are embedded within science lessons, such as calculating distances or graphing data from experiments. Reading comprehension is also supported by presenting scientific texts at appropriate reading levels. Links to real-world issues, such as health and technology, help contextualize learning and make it relevant to students' everyday lives.
- **Assessment and Feedback:** Regular formative assessments, including quizzes, practical assessments, and written tasks, are used to gauge students' understanding of key concepts. These assessments inform future planning and ensure that students can demonstrate their knowledge in a variety of formats. Summative assessments are aligned with GCSE or Entry Level Science criteria, ensuring that students are fully prepared for accreditation. Continuous feedback is provided in a supportive manner to help students recognize their achievements and understand areas for improvement.
- **Support for Accreditation:** The science curriculum is designed to ensure that all students have the opportunity to gain appropriate accreditation, whether it be GCSE Trilogy or Entry Level Science. Teachers closely monitor students' progress, providing tailored support and intervention when necessary. For those pursuing GCSE Trilogy, lessons are designed to cover all required content while offering additional challenge and enrichment to those able to engage at a higher level. For Entry Level students, the curriculum is broken down into manageable chunks, ensuring a clear path of progression that leads to meaningful qualifications.
- **Building Cultural Capital and Life Skills:** Throughout the science curriculum, there is a strong emphasis on developing students' cultural capital by exploring how science impacts their lives and the world around them. From understanding environmental issues to learning about the human body and technology, students gain an appreciation of how science relates to their future life and work. The curriculum is designed to foster curiosity, critical thinking, and the ability to ask questions about the world, helping to remove barriers to future success in education, employment, and personal development.

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- **Safe and Supportive Learning Environment:** We ensure that every science lesson provides a safe, structured learning environment. Teachers and teaching assistants use clear routines and guidelines to help students feel secure and confident in the classroom. Adaptive learning environments, such as quiet spaces or sensory supports, are available for students who may need them. This approach helps reduce anxiety and supports students in engaging fully with the subject matter.
- **Staff Training and Collaboration:** Science teachers and teaching assistants are supported with ongoing professional development opportunities, ensuring they are up to date with best practices in science education, as well as the specific needs of our students. Collaboration between science staff, teaching assistants, and other subject leads ensures that best practices are shared and implemented consistently.

Through these strategies, and with regular, focused teaching sessions, we aim to equip our students with a deep understanding of scientific principles, the ability to apply their knowledge in real-world contexts, and the skills needed to succeed in further education and beyond.

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