Huntington School: Science Department

Curriculum Intent: Key Stage Three Science

The science department at Huntington School will have a curriculum which creates learners who will thrive in a changing world by giving them the knowledge to:

- Confidently and accurately work scientifically and solve scientific problems;
- Think creatively to overcome and tackle problems with resilience and an open mind-set;
- Appreciate and enjoy the uniqueness of science as a discipline;
- Seek further knowledge and skills independently, based upon a fascination of learning;
- Achieve great exam results that allow our students to progress to the next steps in their lives as scientifically informed citizens.

We will develop this in our students by:

- Using purposeful practical activities with an emphasis on understanding scientific ideas rather than participation.
- Highlighting the relevancy of science to the modern world.
- Assessing pupils starting points and their progress by using effective questioning.
- Creating a true multi- disciplinary approach to science where scientific skills are deployed confidently across all three sciences.
- Using guided practice and modelling to scaffold student's problem solving abilities.
- Being reflective practitioners who constantly evaluate and improve our practice.

	Big Idea	Y7 →	Y8 →	Y9 →
Working scientifically is embedded throughout all learning including (but not exclusive to) experimental skills, analysis, evaluating, measurement and scientific attitudes				
Biology	The cellular basis of life	From cells to organ systems Cells Photosynthesis	Cellular respiration Gaseous exchange Digestive system Skeleton and muscles	Cell structure (eukaryotic and prokaryotic cells) Exchange and transport of substances Digestive enzymes Circulatory system
	Heredity and life cycles	Reproduction in both plants and animals Heredity and genetic information	Hereditary diseases	The structure and function of the genome Chromosomes and an introduction to the cell cycle
	Organisms and their environment (including health and disease)	Food chains and food webs Ecosystems (components, dynamics, interdependence)	Heath and disease Diet and exercise	Communicable and non-communicable diseases Cancer
	Variation, adaptation and evolution	Differences within species, identifying organisms Evolution		
Chemistry	Structure and properties	Introduction to solutions Acids and alkalis	Separating solutions Comparing solubility	Trends in physical properties
	Particles and structure	Substances and mixtures (particle model) Elements and compounds Introduction to chemical reactions Understanding chemical reactions	Explaining evaporation	Periodic table Atomic model Rearrangement of atoms

	Chemical reactions	Chemical changes An introduction to combustion Neutralisation	Reactions in solution including displacement and reactivity series	Periodic patterns Exothermic and endothermic reactions
	Earth Chemistry		Earth's resources Physics weathering and erosion	Changes in the atmosphere Climate change Pollution
Physics	Matter	Particle model Heating and cooling Floating, sinking and density	Pressure in fluids	Thermal conduction Convection Thermal store of energy
	Forces and motion	Describing forces (including balanced and unbalanced) Friction and Drag Mass and weight Turning effect An introduction to energy stores and transfers	Describing speed Motion graphs	Energy stores and transfers
	Sound, light and magnetism		Waves Sound and light How we see and hear	
	Earth in space	Solar system and beyond Days and seasons		
Assessment	Detailed feedback tasks are used within a topic and are formative assessment opportunities to assess understanding of learning and to inform future planning. Teacher feedback will be given on a task at least once per half term. Other feedback tools can be used for the other formative assessments e.g. peer feedback. Each year group will have 2 formal tests per year (including end of year exam).			

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<tr><td>Feedback</td><td>
Verbal feedback is recognised as having the greatest impact on student progress and will be at the core of our everyday teaching in Science at all key stages.
Students will usually receive immediate verbal feedback on their contributions, ideas and questions in class. Verbal feedback is often given whilst students are completing tasks, students will usually act on this feedback and improve their work immediately, therefore there is no need for it to be recorded. Students may also receive immediate verbal feedback on their performance on short formative tasks such as mini-quizzes. Verbal feedback can be given on an individual, small group or whole-class basis.
Other in-lesson feedback. In science, students will receive feedback on short activities/tasks/quizzes/their Extended Learning (homework) frequently from lesson to lesson. Frequent use will be made of self- or peer- marking as an efficient method of students receiving immediate feedback and improving their work/knowledge/understanding.
Teacher feedback on specific tasks. Students will be provided with feedback from their teacher on their performance on specific tasks. This feedback could take many forms, again including (but not limited to) this list. This feedback will <u>always</u> provide guidance on how students' work, knowledge or understanding can be improved and/or what students need to do next to make more progress. This feedback may also identify strengths/weaknesses in students' work, if appropriate to the task.
<u>Y7 & Y8</u>
Teacher feedback will be given on a specific task at least once per half term.
<u>Y9</u>
Teacher feedback will be given on a specific task at least once task per half term in each of Biology, Chemistry and Physics; this will usually include/consist of past exam questions on topics studied.
Student responses. Students are expected to act on all feedback. DIRT (Dedicated Improvement and Reflection Time) may be given in lessons for students to improve/correct/re-attempt their work or to complete tasks set in response to their identified areas of need. It should be clear that students' work, knowledge or understanding has improved as a result of the feedback given. Automatic feedback on Teams will also be used to ensure that students receive effective and timely feedback.
Teacher feedback on tests/exams. Students will be provided with detailed feedback on formal tests, end of year exams and mock exams. This feedback could take many forms, including (but not limited to):
a) marking and annotations on test papers
b) written feedback addressed to individuals, small groups or on a whole-class basis
c) verbal feedback addressed to individuals, small groups or on a whole-class basis
d) re-teaching of specific science content, in response to areas of need identified during the marking process
e) use of mark schemes or other written resources (e.g. model answers) which provide feedback on how to improve specific answers and/or describe common mistakes/misconceptions
f) feedback grids to identify areas of strength and weakness and/or guide students to reflect on their performance
Test feedback in science will <u>always</u> (i) identify (or allow students themselves to identify) areas of strength and weakness, and (ii) provide guidance on how students' exam responses can be improved and/or what students need to do next to improve their exam responses/performance in the future.
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<tr><td>Homework</td><td>
Frequency: Homework tasks will be set as and when appropriate related to the learning objectives of each lesson.
Types of tasks:
▪ Consolidation of learning by applying knowledge and using skills to answer set tasks e.g. practise examination questions.
▪ Learning the spelling and key subject terminology e.g. laboratory apparatus, forms of energy, cell organelles etc.
▪ Research in preparation for future tasks e.g. research factors of a healthy pregnancy, the health impacts of smoking, triggers, symptoms and treatment of asthma.
▪ Practise and develop skills e.g. drawing scientific diagrams, graph plotting, identifying patterns, drawing conclusions, answering past exam questions.
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	▪ Learning and revision for summative assessments. ▪ Improvement and use of DIRT time to improve or develop set tasks.
How can I support my child at home?	▪ Asking them about what they are learning ▪ Helping them with homework tasks, especially quizzing them during revision homeworks. ▪ Encourage them to watch the news and discuss real-life examples related to the content covered in lessons. ▪ Encourage them to watch videos on Oak National Academy if they are unsure about a topic ▪ CGP revision resources that can be purchased from the department