



FRAMEWORK FOR LEARNING



CREATIVE

An education where imagination, curiosity and resilience enable us to ignite our learning.

HAPPY

A shared belief that optimism, empathy and responsibility are the foundations for a respectful, safe and inclusive community.

SUCCESSFUL

Individuals who are ready to learn, practise being reflective, and are motivated to become champions.

SUBJECT

SCIENCE

INTENT

"Every brilliant experiment, like every great work of art, starts with an act of imagination." - **Jonah Lehrer**

The Scientific area of learning is concerned with increasing pupils' knowledge and understanding of our world, and with developing skills associated with Science as a process of enquiry. It will develop the natural curiosity of the child, encourage respect for living organisms and the physical environment and provide opportunities for critical evaluation of evidence.

At CHS south we aim to create Scientists that are curious about the natural world and understand the importance of scientific process. We are passionate about developing a curriculum that is accessible to all and one that enriches through cultural capital and extra-curricular opportunities which are provided throughout the 5-year course.

We encourage students to be inquisitive throughout their time at the school and beyond. The curriculum is designed to ensure that students can acquire key scientific knowledge through practical experiences, using equipment, conducting experiments, building arguments and explaining concepts confidently. The school's approach to science takes account of the school's own context, ensuring access to people with specialist expertise and places of scientific interest as part of the school's commitment to learning outside the classroom.



YEAR GROUP

YEAR 8

RATIONAL / NARRATIVE

To further develop knowledge in Biology, Chemistry and Physics and to explore and engage pupil's curiosity of the natural world. Students will continue to develop their ability to write and carry out scientific investigations and then explore more fundamental areas of science which include disease, immunity, diet, health, organ systems, separation techniques, forces, motion and evolution.

TERM KNOWLEDGE

AUTUMN 1

Health and Nutrition

- Diet
- Food groups
- Food tests
- Diabetes
- Digestive system
- Modelling the journey of food
- Enzyme digestion
- Respiratory system
- Gas exchange
- Impact of exercise
- *Drugs (recreational and drugs in sport)*

AUTUMN 2

Acids and Alkali

- Chemical and physical reactions
- Acids and Alkalis
- Indicators and pH
- Neutralisation
- Strong and weak acid, concentration
- Concentration
- Metals and non-metals
- Metals and oxygen, Metals and water
- Metals and acids
- Making salts
- Displacement reactions
- Reactivity series - fruit batteries

SPRING 1

Energy transfer

- Waves
- Wave equations
- Transverse and longitudinal waves
- Reflection
- Refraction
- Dispersion
- Sound
- Transfer of sound through matter
- Structure of the Ear

SPRING 2

Genes and Evolution Variation

- The structure of DNA
- Genes, chromosomes and the nucleus
- Genetic modification
- Selective breeding
- Natural selection
- Evolution
- Extinction
- Wildlife conservation

SUMMER 1

Motion and Forces

- Measuring forces
- Resultant force
- Friction
- Gravity
- Air resistance
- Hooke's Law
- Calculating speed
- Distance time graphs
- Speed and velocity
- Acceleration
- Pressure
- Moments

SUMMER 2

Rocks climate and the Universe

- Global warming
- The rock cycle (types of rock)
- The Earth's structure
- Composition of the atmosphere
- Days and seasons
- Space (planets, stars and galaxies)
- Gravity on Earth
- Changing Moon

SKILLS

Students will learn to write persuasive articles.

Students will learn how to evaluate models and carry out dissections
Students will carry out/write up scientific investigations:

- Students will investigate food groups and food tests

Students will carry out/write up scientific investigations:

- Students will investigate the pH of different solutions and use indicators.
- Students will investigate e reactivity of different metals and make predictions using fruit batteries for

Students will carry out/write up scientific investigations:

- Students will investigate waves in solids and liquids.
- Students will investigate ray diagrams (reflection and refraction, dispersion).
- Students will investigate the speed of sound in air.

Students will develop oracy and presentation skills.

Students will also learn how to write evaluations and comparisons effectively.

Students will build DNA models and evaluate the use of models in science.

Students will learn how to use and apply key terminology and data such as:

- Repeats
- Reliability
- Reproducibility
- Mean
- Error
- Accuracy

Students will carry out/write up scientific investigations:

Students will carry out/write up scientific investigations:

- Analysis of data from the department of energy relating
- Interpret graphs showing climate change data.
- Practical skills-analysis of rock samples, and identification using data.



ASSESSMENT

<ul style="list-style-type: none"> Students will investigate the pH of different substances Students will carry out filtration and evaporation techniques. Students will learn the importance of sample size when carrying out research projects and consider factors that might affect a scientific study (e.g., age/gender etc.) 	<p>displacement. substances.</p> <ul style="list-style-type: none"> Students will learn how to make salt crystals. 		<ul style="list-style-type: none"> Students will write about and discuss the ethics of selective breeding in class. 	<ul style="list-style-type: none"> Students will investigate speed Students will investigate the extension of a spring Students will investigate friction, air resistance and weight and make a Newton meter. 	<ul style="list-style-type: none"> Use of prefixes-kilo, mega, giga.
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<p>Students will be assessed on:</p> <p>EOT low stakes testing - describe and explain the adaptations of alveoli</p> <p>EOT low stakes testing Pupils will write a scientific report that describes how to test proteins, carbohydrates and fats. (peer assessment)</p>	<p>Students will be assessed on:</p> <p>EOT low stakes testing - Design a method to analyse strong and weak acids.</p> <p>EOT low stakes testing Outline a method for producing salts (crystallisation of copper sulphate).</p>	<p>Students will be assessed on:</p> <p>EOT low stakes testing Comparison – similarities and differences between longitudinal and transverse waves</p> <p>EOT low stakes testing Describing a method for testing the law of reflection, Using a ray box and mirror.</p> <p>Progress test (all knowledge content from Autumn 1 and 2 year 8 and summer 2 year 7)</p>	<p>Students will be assessed on:</p> <p>EOT low stakes testing Explain why you share some of your characteristics with your father and some with your mother.</p> <p>EOT low stakes testing Explaining the evolution of the tiger and suggesting causes of extinction</p>	<p>Students will be assessed on:</p> <p>EOT low stakes testing Drawing conclusions. Explaining the motion of objects and the forces that act upon them</p> <p>EOT low stakes testing Explaining pressure in a fluid</p>	<p>Students will be assessed on:</p> <p>EOT low stakes testing Explaining global warming and suggesting the impacts associated with global warming</p> <p>EOT low stakes testing Explaining with the help of a diagram why we have seasons</p> <p>Progress test (all knowledge content from Autumn, spring and atoms/electricity)</p>
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HOME LEARNING

<p>Weekly quizzes set on Educake covering the terms topics, Health and Nutrition.</p>	<p>Weekly quizzes set on Educake covering the terms topics, Acids and Alkalis.</p>	<p>Weekly quizzes set on Educake covering the terms topics, Waves.</p> <p>Revision booklet relevant to the END OF TOPIC TEST.</p>	<p>Weekly quizzes set on Educake covering the terms topics, genes and Evolution.</p>	<p>Weekly quizzes set on Educake covering the terms topics, Motion and Forces.</p>	<p>Weekly quizzes set on Educake covering the terms topics, Rocks, climate and the universe.</p> <p>Revision booklet relevant to the END OF TOPIC TEST.</p>
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READING, WRITING, TALK, NUMERACY

Reading:
Students will read and analyse various texts that given them a firmer understanding of the key words shown below. They will carry out comprehension exercises to help them develop higher levels of literacy such as diabetes, digestive enzymes

Writing:
Students will use CUSTARD to develop their writing skills specific to Students will use the creative writing skills they have learnt in English to produce a piece of creative writing in science such as writing an advice column for people concerned about their diet; digestion and is about the journey of a cheese sandwich through the digestive system. Write a method of how to carry out food tests and describing the respiratory system.

Think pair share:
Students will discuss the following key words and topics in class:
What are the seven food groups?
What is digestion?
What does a healthy diet look like?
What are the impacts of an unhealthy diet?

Reading:
Students will read and analyse various texts that give them a firmer understanding of the key words shown below.

Writing:
Students will use CUSTARD to develop their writing skills specific to write scientifically. They will write a scientific report that demonstrates how to use evidence to test a scientific hypothesis.
Students will use the creative writing skills they have learnt in English to produce
Think pair share:
Students will discuss the following key words and topics in class:
The difference between strong, weak, concentrated and dilute.
The use of acids and alkalis in society.

Reading:
Students will read and analyse various texts that given them a firmer understanding of the key words shown below.

Writing:
Students will use CUSTARD to develop their writing skills specific to write scientifically. They will write a scientific report that demonstrates understanding of reflection and refraction. This will include ray diagrams from the practical they have
Students will learn how to write scientifically. They will write a scientific report that demonstrates how to use evidence to test a scientific hypothesis.
Students will use the creative writing skills they have learnt in English to produce

Think pair share:
Students will discuss the following key words and topics in class:
What is refraction, reflection, and dispersion.
Why does light separate in to the colours of the spectrum.
Why can't we hear sound in space.
What is a wave?

Reading:
Students will read texts about genetics and evolution. They will carry out comprehension exercises to help them develop higher levels of literacy specific to how energy is transferred along a food chain or web.

Writing:
Students will use CUSTARD to develop their writing skills specific to write an essay about the evolution of the Neanderthals. Using knowledge and skills that they have learnt throughout the topic to supplement their work. Students will learn how to write scientifically. They will write a scientific report that demonstrates how to use evidence to test a scientific hypothesis.

Think pair share:
Students will discuss the following key words and topics in class:
What ethical issues surround the selective breeding of animals?
Should we care about the welfare of animals?
What evidence is there for evolution?
Is science based on facts?

Reading:
Students will read and analyse various texts that given them a firmer understanding of the key words shown below.

Writing:
Students will use CUSTARD to develop their writing skills specific to write scientifically. They will write a scientific report that describes how a spring behaves under load.

Think pair share:
Students will discuss the following key words and topics in class:
If an object experiences balanced forces, what is its motion?
What is meant by proportionality?
Why do objects fall at different rates?
Why do astronauts experience weightlessness?

Reading:
Students will read various articles on fossil fuels and a crematorium to evaluate the use of fossil fuels.
Students will read information slides relating to global warming and use these to answer comprehension questions.

Writing:
Students will use CUSTARD to develop their writing skills specific to write a letter to the government detailing steps they can take to minimise global warming and the impacts of using non-renewable energy. They will also analyse letter structure in this task.
Students will learn how to write scientifically. They will write a scientific report that demonstrates how to use evidence to test a scientific hypothesis.
Students will use the creative writing skills they have learnt in English to produce

Think pair share:
Students will discuss the following key words and topics in class:
Why do we burn fossil fuels if they are harmful to the environment?



TIER 2 VOCABULARY

TIER 3 VOCABULARY

PSPSMC, BRITISH VALUES AND DIVERSITY

					How can we minimise the effects of global warming by choosing better methods of transport and power generation.
SEEC: <ul style="list-style-type: none"> • Digestion • Diffusion • Alveoli • Villi • Circulatory • Respiratory 	SEEC: <ul style="list-style-type: none"> • Indicator • State Of Matter • Separation • Filtration • Mixture • Distillation • Density 	SEEC: <ul style="list-style-type: none"> • Reflection • Refraction • Energy • Transverse • Longitudinal 	SEEC: <ul style="list-style-type: none"> • Variation • Evolution • Genetic • Environmental • Mutation • Conservation • Extinction 	SEEC: <ul style="list-style-type: none"> • Potential Energy • Conservation • Elastic • Deformation • Extension • Compression 	SEEC: <ul style="list-style-type: none"> • Sedimentary • Igneous • Metamorphic • Erosion • Compaction
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<p>Physical, Social and cultural: Students will learn about the importance of a healthy diet. They will learn about non –communicable diseases that can be obtained through a lack of exercise and poor diet. They will also discuss the impact diet can have on physical, and mental health, and its effects on society as a whole.</p> <p>Social: Students will learn about the wider role that acids and alkalis play in society. From cleaning products and sanitizers through to foods. Giving context to the chemicals they use in the classroom and the dangers they can pose in society.</p> <p>Moral, Social and cultural: Students will learn about the importance of animal conservation and the role humans can play in protecting endangered species from extinction. They will learn / research specific animals like the elephant and rhino and discuss ideas they implement personally to improve the overall welfare of animals within our society and the world.</p> <p>Social and Cultural: Students will learn about the transfer of various diseases. They will learn about the importance of vaccinations and the myths and misconceptions that currently surround these topics.</p> <p>Moral: Students will discuss the morality of forcing members of society to be vaccinated. Students will learn about the impact of communicable disease like malaria and gonorrhoeal and how we can prevent the transmission of disease to reduce the use of antibiotics in society.</p>					