

## DMS Science Knowledge Progression

**Pupils will have the opportunity to study science on several different pathways – those that are working through Entry Level in Year 9 would be aiming for a level 3, and those studying at GCSE in Year 10/11 would be aiming for a level 4/5 based on the following expected knowledge progression.**

<b>Knowing and understanding science.</b>				
<b>Year 7</b>	<b>Year 8</b>	<b>Year 9 (ELC)</b>	<b>GCSE (2 Year Course)</b>	
Know how to stay safe by following direct instructions in order	Know how to stay safe by following direct instructions in order and how to act to control obvious risks to self.	Know how to recognise hazard symbols and know how to make, and act on, simple suggestions to control obvious risks to self and others.		
Know how to recognise observations, features or parts of fundamental scientific objects and ideas.	Know how to recognise, name and describe observations and features or parts of fundamental scientific objects and ideas.	Know how to describe some processes and phenomena related to organisms, environment, materials, energy, forces and space.	Know how to describe processes and phenomena related to organisms, the environment, materials, energy, forces and space using abstract ideas.	Know how to describe processes and phenomena related to organisms, the environment, materials, energy, forces and space, using abstract ideas and appropriate terminology.
Know how and where to find information by using texts, with help.		Recognise why it is important to collect data to investigate ideas, and how to answer questions and use texts to find information.	Know how to select methods of data collection, measure with precision and understand why measurements / observations are repeated.	
Know how to respond to and make suggestions, with help, about questions.		Know how to suggest practical ways to answer questions with guidance or when prompted to.	Know how to respond to suggestions and how to put forward ideas about how to investigate an idea or find answers to questions.	
Know how to carry out fair tests, with some help, and understand what it is that makes them fair.	Understand how to decide on an appropriate approach, including using a fair test to answer a question, and know how to select suitable equipment and information from that provided.	Understand how to decide appropriate approaches to a range of tasks, including selecting sources of information and apparatus.	Understand how to identify an appropriate approach in investigatory work, selecting and using sources of information.	
Know how to identify science in everyday contexts and how to comment on its relevance.		Know how to talk about work in everyday terms in order to communicate findings.	Know how to talk about work in everyday terms or through drawings or pictograms to communicate findings.	
Know how to recognise and understand how to explain everyday technological developments.			Know how to recognise and understand how to explain the purpose of a variety of scientific & technological developments in everyday life.	

## Investigating and applying science.

Year 7	Year 8	Year 9 (ELC)	GCSE (2 Year Course)
Understand how to explain processes using a model.		Understand how to explain process stages and phenomena using models.	Know how to use abstract ideas or models, e.g. sustainable energy & refraction. Understand how to account for a number of factors or use abstract ideas in explanations of processes and phenomena.
Understand how to use knowledge related to organisms, environment, materials forces, space to identify/describe some changes and properties.	Understand how to use knowledge related to organisms, environment, materials, energy, forces, space; to identify and describe scientific phenomena, observations, properties or ideas.	Understand how to use knowledge of organisms, environment, materials, energy, forces, space to recognise & compare properties, factors & relationships; suggesting answers to questions.	Understand how to use knowledge and understanding of organisms, environment, materials, energy, forces, space to link cause and effect in observations of the properties and differentiate within systems.
Understand how to apply and use knowledge in familiar contexts.			Understand how to apply and use knowledge in unfamiliar contexts.
Understand how to describe basic applications and implications of science.			Understand how to explain some applications & implications of science.
Understand how to recognise a range of risks with help.			Understand how to recognise a range of familiar risks and take action to control them.
Know how to make observations and measurements by varying one factor only.			
Understand how to use equipment and a method provided.		Understand how to select and use methods that are adequate/appropriate for the task.	Understand how to select and use methods to obtain data systematically
Understand how to make observations and measurements to compare things.	Understand how to make some observations about features of objects, living things and events.	Understand how to record observations, comparisons and measurements using tables and bar charts and begin to plot points to form simple graphs.	Understand how to make and record relevant observations & measure quantities, select & use a range of simple equipment, effectively use tables and graphs choosing appropriate scales.
Understand how to form generalised conclusions e.g. sounds get fainter the further they go.		Know the appropriate scientific terminology to communicate conclusions.	Know the appropriate scientific and mathematical conventions and terminology to communicate conclusions.

### Analysing; interpreting & evaluating science.

Year 7	Year 8	Year 9 (ELC)	GCSE (2 Year Course)
Know how to recognise evidence that has been used to answer a question, make links between science and everyday objects.	Know how to link cause and effect, using simple scientific ideas with evidence collected, to give explanations of observations.	Know how to use my ideas and evidence found to suggest answers to questions. Understand that evidence can be used to support or refute scientific ideas.	Understand that both evidence and creative thinking contribute to the development of scientific ideas. Know how to describe some evidence for some accepted scientific ideas.
Use my knowledge of science to recognise & describe similarities & differences, creating groups			Use my knowledge of science to recognise some applications and implications of science.
Know how to give explanations for observations and for patterns in measurements made and recorded.	Know how to analyse data and draw conclusions consistent with the evidence.	Begin to know how to relate conclusions to patterns in data, including graphs, and to scientific knowledge and understanding.	Account for any inconsistencies in evidence by knowing how to analyse findings to draw conclusions that are consistent with the evidence and use scientific knowledge and understanding to explain them.
Know how to interpret data containing positive and negative numbers.		Know how to use line graphs to present data and understand how to interpret numerical data and draw conclusions from them.	Know how to manipulate numerical data to make valid comparisons and draw valid conclusions
Know how to say whether what happened was expected and, when prompted, suggest different ways to do things.	Understand how to communicate results in a scientific way and how to suggest possible reasons for them as well as improvements.	Know how to evaluate working methods, in order to make improvement suggestions with reasoning.	Understand how to evaluate evidence, making reasoned suggestions about how working methods could be improved.