HAYDOCK HIGH SCHOOL

Science Progress Grid

Level	CF1- Communicating in Science	CF2- Experimental Skills and Strategies	CF3- Analysis And Evaluation
9	- Students present robust and well-structured explanations, arguments or counter arguments in a variety of ways. - Students suggest the specialisms and skills that would be needed to solve particular scientific problems or generate particular technological advancements	- Students choose and justify data collection methods that minimise error, and produce precise and reliable data. - Students readily identify hazards, seek appropriate risk assessment information and advice, select that which is relevant and suggest adjustments to practice as required. - Students make records of relevant observations and comparisons, clearly identifying points of particular significance. - Students independently decide the level of precision needed for measurements and collect data that satisfy these requirements.	- Students propose scientific explanations for unexpected observations or measurements making allowances for anomalies. - Students process data using multi-step calculations to identify complex relationships between variables. - Students critically interpret and evaluate conflicting evidence. - Students analyse findings to interpret trends and patterns and draw detailed and complex conclusions from their evidence. - Students suggest and justify improvements to experimental procedures using detailed scientific knowledge and understanding. - Students suggest coherent strategies to take particular investigations further.

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8	- Students effectively represent abstract ideas using symbols, flow diagrams and graphs. - Students explain how information may have been manipulated to influence ideas.	- Students can explain how to take account of sources of error in order ro collect reliable data. - Students readily identify hazards, seek appropriate risk assessment information and advice, select that which is relevant and, in consultation with their teacher, adjust practice as required. - Students make records of relevant observations and comparisons, clearly identifying points of particular significance. - Students decide the level of precision needed for measurements and collect data that satisfy these requirements.	- Student use simple statistical techniques when analysing data, and link to a level of uncertainty. - Students analyse findings to interpret trends and patterns and draw complex conclusions from their evidence. - Students evaluate evidence critically and give reasoned accounts of how they could collect additional evidence. - Students identify limitations in data collection methods, and suggest improvements to increase reliability of data collected.

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7	- Students explain how different scientists have contributed to science. - Students distinguish between data from primary and secondary data.	- Students identify key variables in complex contexts explaining why some can't be readily be controlled. - Students readily identify hazards, seek appropriate risk assessment information and advice, select that which is relevant and, in consultation with their teacher, adjust practice as required. - Students make records of relevant observations and comparisons, clearly identifying points of particular significance. - Students suggest the level of precision needed for measurements and collect data that satisfy these requirements.	- Students explain how data can be interpreted in different ways. - Students analyse findings to interpret trends and patterns and draw conclusions from their evidence. - Students identify quantitative relationships between variables, using them to inform conclusions and make further predictions. - Students assess the strength of evidence, deciding whether it is sufficient to support a conclusion. - Students explain ways of modifying working methods to improve reliability.

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6	- Students communicate qualitative and quantitative data appropriately. - Students indentify lack of balance in the presentation of information and evidence. - Students communicate abstract ideas using appropriate scientific and mathematical conventions.	- Students identify significant variables, recognising independent and dependant. - Students recognise the need for a risk assessment and consult appropriate sources of information, which students follow. - Students record data that are relevant and sufficiently detailed, and choose methods that will obtain these data with the precision and reliability needed.	- Students analyse data and begin to explain, and allow for, anomalies. - Students suggest reasons for why there might be anomalies - Students suggest limitations in evidence collected. - Students carry out multi-step calculations.
5	- Students distinguish between scientific evidence and opinion, using evidence to support or challenge scientific arguments. - Students decide on the most appropriate was to present data. - Students suggest how collaborative approaches to an investigation may improve the evidence collected.	- Students recognise significant variables and select the most suitable to investigate. - Students identify risks and acts on suggestions to control the risks. - Students explain why certain equipment is appropriate for an investigation. - Students record data that are relevant and sufficiently detailed, and choose methods that will obtain these data with the precision and reliability	- Students interpret data in various formats, recognising anomalous results. - Students explain differences in repeated investigations. - Students draw valid conclusions that use more than one piece of supporting evidence. - Students evaluate working methods suggesting ways to improve them.

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		needed. - Students repeat investigations, selecting suitable ranges and intervals.	
4	- Students communicate ideas using appropriate scientific language. - Students communicate ideas using scientific and mathematical conventions. - Students select appropriate ways of presenting data.	- Students decide when it is necessary to carry out a fair test. - Students make measurements and observations during a practical and identify ranges - Students select the correct equipment for an investigation. - Students identify possible risks to themselves or others.	- Students record data in graphs, using lines of best fit. - Students combine scientific evidence to draw conclusions from dta presented in different formats. - Students begin to consider whether the data they have collected are sufficient for the conclusions students have drawn. - Students suggest ways to improve an investigation giving reasons.

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3	- Students use simple scientific during scientific to describe simple scientific processes. - Students can identify if scientific developments have a positive or negative consequence.	- Students select and use methods to collect adequate data for the task, measuring with precision, using instruments with fine scale divisions, and identify the need to repeat measurements and observations. - Students recognise a range of familiar risks and take action to control them. - Students record data and features effectively.	- Students begin to plot points to form simple graphs. - Students make comparisons from the data/observation and produce a simple conclusion. - Students make suggestions about how their methods could be improved.
2	- Students state why it is important to work in groups when carrying out an investigation. - Students can answer some simple questions.	- Students use a given method to collect data and make some observations. - Students recognise hazard symbols or obvious risks and act on simple suggestions to control risks to themselves or others.	- Student draw bar charts to display data collected. - Students state what the data shows in an investigation. - Students suggest a way to improve an investigation.
1	- Students can state with guidance	- Students use a given method with	- Students can use simple mathematical

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	why it is important to work in groups when carrying out an investigation. - Students can answer some simple questions with guidance.	guidance from staff. - Following instructions, students take action to control obvious risks to themselves. - Students make observations and collect data with guidance/support. - Students record their observations/data in a given table.	concepts to calculate results - Students can recognise some patterns in results.