Woodland Academy Trust Disciplinary Knowledge

Subject area: Science

Woodland Academy Trust

Ignite the spark, reveal the champion

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working scientifically	To use the following practical scientific methods, processes and skill (adult support may be needed).	To use the following practical scientific methods, processes and skills with increasing confidence.	To use the following practical scientific methods, processes and skills	To use the following practical scientific methods, processes and skills with increasing confidence.	To use the following practical scientific methods, processes and skills	To use the following practical scientific methods, processes and skills with increasing confidence.
Questioning and enquiring planning	Asks simple questions about the world around us. Begins to recognise that they can be answered in different ways (different types of enquiry including - observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative tests, finding things out from secondary sources).	Asks questions about the world around us. Recognises that they can be answered in different ways (different types of enquiry including - observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative tests, finding things out from secondary sources).	Asks some relevant questions and use different types of scientific enquiries to answer them. Begins to explore everyday phenomena and the relationships between living things and familiar environments. Begins to develop ideas about functions, relationships and interactions. Begins to raise own questions about the world around them. Begins to make some decisions about which types of enquiry will be the best way of answering questions including observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative and fair	Asks relevant questions and use different types of scientific enquiries to answer them. Explores everyday phenomena and the relationships between living things and familiar environments. Begins to develop ideas about functions, relationships and interactions. Raises own questions about the world around them. Makes some decisions about which types of enquiry will be the best way of answering questions including observing changes over time, noticing patterns, grouping and classifying,	Begins to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Begins to explore and talk about ideas, ask own questions about scientific phenomena, analyse functions, relationships and interactions more systematically. Begins to recognise some more abstract ideas and Begins to recognise how these ideas help them to understand how the world operates. Begins to recognise scientific ideas change and develop over time. Begins to select the most	Plans different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Explores and talks about ideas, ask own questions about scientific phenomena, analyse functions, relationships and interactions more systematically. Begins to recognise more abstract ideas and Begins to recognise how these ideas help them to understand how the world operates. Begins to recognise scientific ideas change and develop over time. Selects the most appropriate ways to answer science questions using different types of scientific enquiry

			tests, finding things out using secondary sources.	carrying out simple comparative and fair tests, finding things out using secondary sources.	appropriate ways to answer science questions using different types of scientific enquiry (including observing changes over different periods of time, noticing patterns, grouping and classifying, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information.)	(including observing changes over different periods of time, noticing patterns, grouping and classifying, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information.)
Observing and measuring pattern seeking	Begins to observe closely, using simple equipment. Uses simple observations and ideas to suggest answers to questions. Observes simple changes over time and, with guidance, begins to notice patterns and relationships. Says what is being looked for and what is being measured. Know how to use simple equipment safely. Use simple measurements and equipment with support (eg hand lenses and egg timers) Begins to progress	Observe closely, using simple equipment. Use observations and ideas to suggest answers to questions. To observe changes over time and, with guidance, begins to notice patterns and relationships. To say what I am looking for and what I am measuring. To know how to use simple equipment safely. Use simple measurements and equipment with increasing independence (e.g. hand lenses and egg timers) Begins to progress from non-standard units, reading mm, cm, m, ml, l,	Begins to make systematic and careful observations and, where appropriate, takes accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Begins to look for naturally occurring patterns and relationships and decide what data to collect to identify them. Helps to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. Learns to use some new equipment appropriately (e.g. data loggers). Begins to see a pattern in results. Begins to choose from a selection of equipment.	Makes systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Begins to look for naturally occurring patterns and relationships and decide what data to collect to identify them. Helps to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. Learns to use new equipment appropriately (e.g. data loggers). Sees a pattern in results.	Begins to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. Begins to identify patterns that might be found in the natural environment. Begins to make decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them. Chooses the most appropriate equipment and explains how to use it accurately. Begins to interpret data and find patterns. Selects equipment independently. Makes a set of observations and say what the interval	Takes measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. Identifies patterns that might be found in the natural environment. Makes decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them. Chooses the most appropriate equipment and explains how to use it accurately. Interprets data and find patterns. Selects equipment independently. Makes a set of observations and say what the interval and range are. Takes accurate and precise measurements – N, g, kg, mm, cm, mins,

	from non-standard units, reading cm, m, cl, l, °C.	°C.	Begins to observe and measure accurately using standard units including time in minutes and seconds.	Chooses from a selection of equipment. Observes and measure accurately using standard units including time in minutes and seconds.	and range are. Begins to take accurate and precise measurements – N, g, kg, mm, cm, mins, seconds, cm²V, km/h, m per sec, m/ sec Graphs – pie, line.	seconds, cm²V, km/h, m per sec, m/ sec Graphs – pie, line, bar (Year 6).
Investigating	Performs simple tests with support. Begins to discuss ideas about how to find things out. Begins to say what happened in investigations.	Performs simple tests. Discusses ideas about how to find things out. Says what happened in investigation.	Sets up some simple practical enquiries, comparative and fair tests. Begins to recognise when a simple fair test is necessary and helps to decide how to set it up. Begins to think of more than one variable factor.	Sets up simple practical enquiries, comparative and fair tests. Recognises when a simple fair test is necessary and helps to decide how to set it up. Thinks of more than one variable factor.	Begins to use test results to make predictions to set up further comparative and fair tests. Begins to recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. Begins to suggest improvements to methods and gives reasons. Begins to decide when it is appropriate to do a fair test.	Uses test results to make predictions to set up further comparative and fair tests. Recognises when and how to set up comparative and fair tests and explains which variables need to be controlled and why. Suggests improvements to methods and give reasons. Decides when it is appropriate to do a fair test.

Recording and reporting findings	Gathers and records data with some adult support, to help in answering questions. Begins to record simple data. Begins to record and communicate findings in a range of ways. Shows results in a simple table.	Gathers and records data to help in answering questions. Records simple data. Records and communicates findings in a range of ways. Shows results in a table.	Gathers, records, and begins to classify and present data in a variety of ways to help in answering questions. Begins to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Begins to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Begins to use notes, simple tables and standard units and help to decide how to record and analyse data. Begins to record results in tables and bar charts.	Gathers, records, classifies and presents data in a variety of ways to help in answering questions. Records findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Reports on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Uses notes, simple tables and standard units and helps to decide how to record and analyse data. Records results in tables and bar charts.	Begins to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. Begins to report and present findings from enquiries. Begins to decide how to record data from a choice of familiar approaches. Begins to choose how best to present data.	Records data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. Reports and presents findings from enquiries. Decides how to record data from a choice of familiar approaches. Chooses how best to present data.
Identifying, grouping and classifying	Identifies and classifies with some support. Begins to observe and identify, compare and describe. Begins to use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.	Identifies and classifies. Observes and identifies, compares and describes. Uses simple features to compare objects, materials and living things and, with help, decides how to sort and group them.	Begins to identify differences, similarities or changes related to simple scientific ideas and processes. Begins to talk about criteria for grouping, sorting and classifying and use simple keys. Begins to compare and group according to behaviour or properties, based on testing.	Identifies differences, similarities or changes related to simple scientific ideas and processes. Talks about criteria for grouping, sorting and classifying and uses simple keys. Compares and groups according to behaviour or properties, based on testing.	Begins to use and develop keys and other information to identify, classify and describe living things and materials.	Uses and develops keys and other information to identify, classify and describe living things and materials.

Research	Begins to use simple secondary sources to find answers. Begins to find information from books and computers with help.	Uses simple secondary sources to find answers. Finds information from books and computers with help.	Begins to recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations.	Begins to recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations.	Begins to recognise which secondary sources will be most useful to research ideas.	Recognises which secondary sources will be most useful to research ideas.
Conclusions	Begins to talk about what they have found out and how they found it out. Begins to say what happened in the investigation.	Talks about what they have found out and how they found it out. Says what happened in the investigations. Begins to say whether results were as expected. Begins to say what should be changed in an investigation.	Begins to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Begins to use straightforward scientific evidence to answer questions or to support findings. Begins to look for changes, patterns, similarities and differences in data in order to draw simple conclusions and answer questions. With support begins to identify new questions arising from the data, make new predictions and find ways of improving what has been done. Begins to see a pattern in results. Begins to say what has been found out, linking cause and effect. Begins to say how an experiment can be improved.	Uses results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Uses straightforward scientific evidence to answer questions or to support findings. Looks for changes, patterns, similarities and differences in data in order to draw simple conclusions and answer questions. Identifies new questions arising from the data, make new predictions and finds ways of improving what has been done. Sees a pattern in results. Says what has been found out, linking cause and effect.	Begins to report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Begins to identify scientific evidence that has been used to support or refute ideas or arguments. Begins to draw conclusions based on data and observations, use evidence to justify ideas, use scientific knowledge and understanding to explain findings. Begins to use test results to make predictions to set up further comparatives and fair tests. Begins to look for different causal relationships in data and identify evidence that refutes or supports ideas.	Reports and presents findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Identifies scientific evidence that has been used to support or refute ideas or arguments. Draws conclusions based on data and observations, uses evidence to justify ideas, uses scientific knowledge and understanding to explain findings. Uses test results to make predictions to set up further comparatives and fair tests. Looks for different causal relationships in data and identifies evidence that refutes or supports ideas.

			Begins to answer questions from results.	Identifies improvements. Answers questions from results.	Uses results to identify when further tests and observations are needed. Begins to separate opinion from fact. Begins to draw conclusions and identify scientific evidence. Uses simple models. Knows which evidence proves a scientific point. Begins to use test results to make predictions to set up further comparative and fair tests.	Uses results to identify when further tests and observations are needed. Separates opinion from fact. Draws conclusions and identifies scientific evidence. Uses simple models. Knows which evidence proves a scientific point. Uses test results to make predictions to set up further comparative and fair tests.
Vocabulary	Uses some simple scientific language. Begins to use some science words. Uses comparative language with support.	Uses simple scientific language and some science words. Uses comparative language – bigger, faster etc.	Begins to use some scientific language to talk and, later, write about what they have found out. Begins to use relevant scientific language. Begins to use comparative and superlative language.	Uses some scientific language to talk and, later, write about what they have found out. Uses relevant scientific language. Uses comparative and superlative language.	Begins to read, spell and pronounce scientific vocabulary correctly. Begins to use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas. Begins to confidently use a range of scientific vocabulary. Begins to use conventions such as trend, rogue result, support prediction and -er word generalisation. Begins to use scientific ideas when describing simple processes. Begins to use the correct science vocabulary.	Read, spell and pronounce scientific vocabulary correctly. Use relevant scientific language, and illustrations to discuss, communicate and justify scientific ideas. Confidently uses a range of scientific vocabulary. Uses conventions such as trend, rogue result, support prediction and -er word generalisation. Uses scientific ideas when describing simple processes. Can use the correct science vocabulary.

| Understanding | Begins to talk about how science helps us in our daily lives e.g. torches and lights help us see hen it is dark.

Begins to understand science can sometimes be dangerous. | Talks about how science helps us in our daily lives e.g. torches and lights help us see when it is dark.

Begins to understand science can sometimes be dangerous. | Begins to know which things in science have made our lives better.

Begins to understand risk in science. | Knows which things in science have made our lives better.

Understands there is some risk in science. | Begins to talk about how scientific ideas have changed over time.

Begins to explain the positive and negative effects of scientific development.

Begins to see how science is useful in everyday life.

Begins to say which parts of our lives rely on science. | Talks about how scientific ideas have changed over time.

Explains the positive and negative effects of scientific development.

Sees how science is useful in everyday life.

Says which parts of our lives rely on science. |
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