SCIENCE PROGRESSION OF KNOWLEDGE AND SKILLS

Northchapel Primary School

growing kind and curious children who aspire to succeed.

Early Years	**0-3 Understanding the World** Explore materials with different properties. Explore natural materials, indoors and outside. Explore and respond to different natural phenomena in their setting and on trips.	**3-4 Understanding the World** Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.	**ELG Understanding the World** **The Natural World ELG** Children at the expected level of development will: - Explore the natural world around them, making observations and drawing pictures of animals and plants; - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Working Scientifically	To use the following practical scientific methods, processes and skills (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	To use the following practical scientific methods, processes and skills	To use the following practical scientific methods, processes and skills
Questioning and enquiring planning	Ask simple questions about the world around us. Begin to recognise that they can be answered in different ways. Different types of	Ask questions about the world around us. Recognise that they can be answered in different ways. Different types of enquiry including -	Ask some relevant questions and use different types of scientific enquiry to answer them. Begin to explore everyday phenomena	Ask relevant questions and use different types of scientific enquiries to answer them. Explore everyday phenomena	Begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Explore

	enquiry including - observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative tests, finding out things from secondary sources. I can ask a few simple questions about the world around us. I can begin to use some different types of enquiry to answer questions.	observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative tests, finding things out from secondary sources. I can ask simple questions about the world around us. I can begin to use different types of enquiry to answer questions.	and the relationships between living things and familiar environments. Begin to develop their ideas about functions, relationships and interactions. Begin to raise their own questions about the world around them. Begin 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 tests, finding things out using secondary sources. I can ask some relevant questions about the world around us. I can use some different types of scientific enquiry to answer questions.	and the relationships between living things and familiar environments. Begin to develop their ideas about functions, relationships and interactions. Raise their own questions about the world around them. 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 tests, finding things out using secondary sources. I can ask relevant questions about the world around us. I can use different types of scientific enquiry to answer questions.	necessary. Begin to explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically. Begin to recognise some more abstract ideas and begin to recognise how these ideas help them to understand how the world operates. Begin to recognise scientific ideas change and develop over time. Begin to select the most 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	and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically. Begin to recognise more abstract ideas and begin to recognise how these ideas help them to understand how the world operates. Begin to recognise scientific ideas change and develop over time. Select the most 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

			I am beginning to decide which type of enquiry is best to answer my question.	I am beginning to decide which type of enquiry is best to answer my question.	wide range of secondary sources of information.) I am beginning to explore ideas and ask my own questions about scientific phenomena. I am beginning to plan different types of scientific enquiry to answer questions. I am beginning to decide which variables to control.	wide range of secondary sources of information.) I can explore ideas and ask my own questions about scientific phenomena. I can plan different types of scientific enquiry to answer questions. I can decide which variables to control.
Observing and measuring pattern seeking	Begin to observe closely, using simple equipment. Use simple observations and ideas to suggest answers to questions. To observe simple changes over time and, with guidance, begin 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	Observe closely, using simple equipment. Use observations and ideas to suggest answers to questions. To observe changes over time and, with guidance, begin 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	Begin to make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Begin to look for naturally occurring patterns and relationships and decide what data	Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify	Begin to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. Begin to identify patterns that might be found in the natural environment. Begin to make their own decisions about what observations to make, what measurements to use and how long to	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. Identify patterns that might be found in the natural environment. Make their own decisions about what observations to make, what measurements to use and how long to make them for and

	measurements and equipment with support (eg hand lenses and egg timers) Begin to progress from non-standard units, reading cm, m, cl, l, °C. I can begin to observe changes over time. I can begin say what I am looking for and what I am measuring. I can measure with non-standard units and can begin to use simple standard units eg, mm, cm, m, ml, l , ºC. I can use some simple equipment eg hand lenses, egg timers.	increasing independence (eg hand lenses and egg timers). Begin to progress from non-standard units, reading mm, cm, m, ml, l, °C. I can observe changes over time. I can say what I am looking for and what I am measuring. I can measure with non-standard units and can begin to use simple standard units eg, mm, cm, m, ml, l , ºC I can use simple equipment eg hand lenses, egg timers.	to collect to identify them. Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. Learn to use some new equipment appropriately (eg data loggers). Begin to see a pattern in my results. Begin to choose from a selection of equipment. Begin to observe and measure accurately using standard units including time in minutes and seconds. I can make systematic and careful observations. I can decide what to observe and how long to collect observations. I can take accurate measurements	them. Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. Learn to use new equipment appropriately (eg data loggers). Can see a pattern in my results. I can choose from a selection of equipment. I can observe and measure accurately using standard units including time in minutes and seconds. I can make systematic and careful observations. I can decide what to observe and how long to collect observations. I can take accurate measurements using standard.	make them for and whether to repeat them. Choose the most appropriate equipment and explain how to use it accurately. Begin to interpret data and find patterns. Select equipment on my own. Can make a set of observations and say what the interval and range are. Begin to take accurate and precise measurements – N, g, kg, mm, cm, mins, seconds, cm^2V, km/h, m per sec, m/ sec Graphs – pie, line I can make accurate and precise measurements. I can decide what to observe, how long to observe for and whether to repeat them. I can take accurate and precise	whether to repeat them. Choose the most appropriate equipment and explain how to use it accurately. I can interpret data and find patters I can select equipment on my own. I can make a set of observations and say what the interval and range are. I can use acurate and precise measurements – N, g, kg, mm, cm, mins, seconds,ns. cm^2V, km/h, m per sec, m/ sec Graphs – pie, line, bar (Year 6) I can make accurate and precise measurements. I can decide what to observe, how long to observe for and whether to repeat them.

			using standard units eg. mm, cm, m, ml, l, ºC, seconds, minutes.		measurements using standard units. N, g, kg, mm, cm, mins, seconds, cm^2V, km/h, m per sec, m/ sec. I can select equipment on my own and can explain how to use it accurately.	I can take accurate and precise measurements using standard units N, g, kg, mm, cm, mins, seconds, cm^2V, km/h, m per sec, m/ sec. I can select equipment on my own and can explain how to use it accurately.
Investigating	Perform simple tests with support. To begin to discuss my ideas about how to find things out. To begin to say what happened in my investigation. I can begin to perform simple tests. I can begin to discuss my ideas. I can begin to say what happened in an investigation.	Perform simple tests. To discuss my ideas about how to find things out. To say what happened in my investigation. I can perform simple tests. I can discuss my ideas. I can say what happened in an investigation.	Set up some simple practical enquiries, comparative and fair tests. Begin to recognise when a simple fair test is necessary and help to decide how to set it up. Begin to think of more than one variable factor. I can set up some simple practical enquiries. Including comparative and fair tests. I am beginning to help decide which variables to keep the same and which	Set up simple practical enquiries, comparative and fair tests. Recognise when a simple fair test is necessary and help to decide how to set it up. Can think of more than one variable factor. I can set up simple practical enquiries. Including comparative and fair tests. I can help decide which variables to keep the same and which to	Begin to use test results to make predictions to set up further comparative and fair tests. Begin to recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. Begin to suggest improvements to my method and give reasons. Begin to decide when it is appropriate to do a fair test. I can sometimes set up a range of	Begin to use test results to make predictions to set up further comparative and fair tests. Begin to recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. Begin to suggest improvements to my method and give reasons. Begin to decide when it is appropriate to do a fair test. I can sometimes set up a range of

			to change.	change.	comparative and fair tests. I am beginning to explain which variables need to be controlled and why. I am beginning to suggest improvements to my test, giving reasons.	comparative and fair tests. I am beginning to explain which variables need to be controlled and why. I am beginning to suggest improvements to my test, giving reasons.
Recording and reporting findings	Gather and record data with some adult support, to help in answering questions. Begin to record simple data. Begin to record and communicate their findings in a range of ways. Can show my results in a simple table that my teacher has provided. I can begin to collect simple data. I can begin to record data in a table my teacher has provided. I can begin to communicate my findings in a variety of	Gather and record data to help in answering questions. Record simple data. Record and communicate their findings in a range of ways. I can show my results in a table that my teacher has provided. I can collect simple data. I can record data in a table my teacher has provided. I can communicate my findings in a variety of ways.	Gather, record, and begin to classify and present data in a variety of ways to help in answering questions. Begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Begin to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Begin to use notes, simple tables and standard units and help to	Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use notes, simple tables and standard units and help to decide how to record and analyse their data.	Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. Begin to report and present findings from enquiries. Begin to decide how to record data from a choice of familiar approaches. Begin to choose how best to present data. I am beginning to record data and results of increasing complexity using – scientific diagrams and labels,	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. Report and present findings from enquiries. Decide how to record data from a choice of familiar approaches. I can choose how best to present data. I can record data and results of increasing complexity using – scientific diagrams and labels classification keys,

	ways.		decide how to record and analyse their data. Begin to record results in tables and bar charts. I am beginning to collect data in a variety of ways, including labelled diagrams, bar charts and tables. I am beginning to help decide how to record data. I am beginning to communicate findings using simple scientific language.	I can record results in tables and bar charts. I can collect data in a variety of ways, including labelled diagrams, bar charts and tables. I can help decide how to record data. I can communicate findings using simple scientific language	classification keys , tables ,bar graphs, line graphs. I am beginning to choose how best to present data. I am beginning to communicate findings using detailed scientific language.	tables, bar graphs and line graphs. I can choose how best to present data. I can communicate findings using detailed scientific language.
Identifying, grouping and classifying	Identify and classify with some support. To begin to observe and identify, compare and describe. To begin to use simple features to compare objects, materials and living things and, with help, decide how to sort and group them. I can begin to identify a variety of objects,	Identify and classify. Observe and identify, compare and describe. Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them. I can identify a variety of objects, materials and living things.	Begin to identify differences, similarities or changes related to simple scientific ideas and processes. Begin to talk about criteria for grouping, sorting and classifying and use simple keys. Begin to compare and group according to behaviour or	Identify differences, similarities or changes related to simple scientific ideas and processes. Talk about criteria for grouping, sorting and classifying and use simple keys. Compare and group according to behaviour or properties, based on testing.	Begin to use and develop keys and other information records to identify, classify and describe living things and materials. I am beginning to use keys and other information records to classify and describe living things,	Use and develop keys and other information records to identify, classify and describe living things and materials. I can use keys and other information records to classify and describe living things, materials and other scientific phenomena.

	materials and living things. I can begin to compare, sort and group a range of objects, materials and living things.	I can compare, sort and group a range of objects, materials and living things	properties, based on testing. I am beginning to talk about and identify differences and similarities in the properties or behaviour of living things, materials and other scientific phenomena. I am beginning to identify simple changes related to simple scientific phenomena. I am beginning to discuss criteria for grouping and sorting and can classify using simple keys.	I can talk about and identify differences and similarities in the properties or behaviour of living things, materials and other scientific phenomena. I can identify simple changes related to simple scientific phenomena. I can discuss criteria for grouping and sorting and can classify using simple keys.	materials and other scientific phenomena. I am beginning to develop my own keys and other information records to classify and describe. I am beginning to identify changes related to scientific phenomena.	I can develop my own keys and other information records to classify and describe. I can identify changes related to scientific phenomena.
Research	To begin to use simple secondary sources to find answers. To begin to find information to help me from books and computers with help. I can begin to find information to help me from books,	Use simple secondary sources to find answers. Can find information to help me from books and computers with help. I can find information to help me from books, computers and other familiar sources.	Begin to recognise when and how secondary sources might help to answer questions that cannot be answered through Practical investigations. I can begin to decide when research will help in my enquiry.	Begin to recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations. I can begin to decide when research will help in my enquiry.	Begin to recognise which secondary sources will be most useful to research their ideas. I am beginning to recognise which secondary source will be most useful to my research.	Recognise which secondary sources will be most useful to research their ideas. I can recognise which secondary source will be most useful to my research.

	computers and other familiar sources.		I am beginning to carry out simple research on my own.	I can carry out simple research on my own.	I can begin to carry out research independently.	I can carry out research independently.
Conclusions	Begin to talk about what they have found out and how they found it out. To begin to say what happened in my investigation. To begin to say whether I was surprised at the results or not. To begin to say what I would change about my investigation. I can begin to talk about what I have found out. I can begin to explain how I carried out my enquiry. I can begin to suggest simple changes to my enquiry.	Talk about what they have found out and how they found it out. To say what happened in my investigation. To say whether I was surprised at the results or not. To say what I would change about my investigation. I can talk about what I have found out. I can explain how I carried out my enquiry. I can suggest simple changes to my enquiry.	I am beginning to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Am beginning to use straightforward scientific evidence to answer questions or to support their findings. With help, am beginning to look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. With support, am beginning to identify new questions arising from the data, make new predictions and find ways of improving what they have already done.	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Use straightforward scientific evidence to answer questions or to support their findings. With help, look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. With support, identify new questions arising from the data, make new predictions and find ways of improving what they have already done. Can see a pattern in my results. Can say what I found out, linking cause and	Am beginning 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. Begin to identify scientific evidence that has been used to support or refute ideas or arguments. Begin to draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings. Begin to use test results to make predictions to set up further comparatives and fair tests. Begin to look for different	Reporting and presenting 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. Identify scientific evidence that has been used to support or refute ideas or arguments. Draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings. Use test results to make predictions to set up further comparatives and fair tests. Look for different causal

			Am beginning to see a pattern in my results. Am beginning to say what I found out, linking cause and effect. Am beginning to say how I could make it better. Am beginning to answer questions from what I have found out. I am beginning to draw simple conclusions based on the results of my enquiry. I am beginning to answer my questions using the results of my enquiry. I am beginning to use my findings to make new predictions, suggest improvements and think of new questions. I am beginning sometimes to think of cause and effect in my explanations.	effect. Can say how I could make it better. Can answer questions from what I have found out. I can draw simple conclusions based on the results of my enquiry. I can answer my questions using the results of my enquiry. I can use my findings to make new predictions, suggest improvements and think of new questions. I can begin to think of cause and effect in my explanations.	causal relationships in their data and identify evidence that refutes or supports their ideas. Use their results to identify when further tests and observations are needed. Begin to separate opinion from fact. Begin to draw conclusions and identify scientific evidence. Can use simple models. Know which evidence proves a scientific point. Begin to use test results to make predictions to set up further comparative and fair tests. I am beginning to draw scientific, causal conclusions using the results of an enquiry to justify my ideas. I am beginning to explain my conclusion using scientific knowledge and understanding.	relationships in their data and identify evidence that refutes or supports their ideas. Use their results to identify when further tests and observations are needed. Separate opinion from fact. Can draw conclusions and identify scientific evidence. Can use simple models. Know which evidence proves a scientific point. Use test results to make predictions to set up further comparative and fair tests. I can draw scientific, causal conclusions using the results of an enquiry to justify my ideas. I can explain my conclusion using scientific knowledge and understanding. I can distinguish opinion and facts.

					I am beginning to distinguish opinion and facts. I am beginning to use my findings to make predictions and set up further enquiries. I can begin to use abstract models to explain my ideas.	I can use my findings to make predictions and set up further enquiries I can begin to use abstract models to explain my ideas.
Vocabulary	Use some simple scientific language. Begin to use some science words. Use comparative language with support. I can begin to use simple scientific language. I can begin to describe what I see eg something is long. I can begin to compare eg something is longer or shorter.	Use some simple scientific language. Begin to use some science words. Use comparative language with support. I can begin to use simple scientific language. I can begin to describe what I see eg something is long. I can begin to compare eg something is longer or shorter.	Begin to use some scientific language to talk and, later, write about what they have found out. Begin to use relevant scientific language. Begin to use comparative and superlative language. I am beginning to use some scientific language in my work. I am beginning to describe my observations and my findings.. I am beginning to use comparative and superlative descriptions eg longer	Use some scientific language to talk and, later, write about what they have found out. Use relevant scientific language. Use comparative and superlative language I can use some scientific language in my work. I can describe my observations and my findings.. I can use comparative and superlative descriptions eg longer / shorter than, longest / shortest.	Am beginning to read, spell and pronounce scientific vocabulary correctly. Am beginning to use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas. Am beginning to confidently use a range of scientific vocabulary. Am beginning to use conventions such as trend, rogue result, support prediction and -er word generalisation. Am beginning to use scientific ideas when describing simple	Read, spell and pronounce scientific vocabulary correctly. Use relevant scientific language. And illustrations to discuss, communicate and justify scientific ideas. Can confidently use a range of scientific vocabulary. Can use conventions such as trend, rogue result, support prediction and -er word generalisation. Can use scientific ideas when describing simple processes. Can use the correct science vocabulary

			/ shorter than, longest / shortest. I can begin to describe cause and effect.	I can begin to describe cause and effect.	processes. Am beginning to use the correct science vocabulary. I am beginning to read, spell and pronounce scientific vocabulary correctly. I am beginning to confidently use the correct scientific language when appropriate. I am beginning to explain my ideas with scientific reasons. I am beginning to use scientific conventions eg trends, rogue result, support prediction.	I can read, spell and pronounce scientific vocabulary correctly. I can confidently use the correct scientific language when appropriate. I can explain my ideas with scientific reasons. I can use scientific conventions eg trends, rogue result, support prediction.
Understanding	Can begin to talk about how science helps us in our daily lives eg Torches and lights help us see hen it is dark. Am beginning to understand science can sometimes be dangerous.	Can talk about how science helps us in our daily lives eg. torches and lights help us see hen it is dark. Am beginning to understand science can sometimes be dangerous. I can say how science	Begin to know which things in science have made our lives better. Can begin to understand risk in science. I am beginning to know which things in science have made our lives better eg	Knows which things in science have made our lives better. Can understand there is some risk in science. I know some things in science which have made our lives better eg computers in schools, hospitals etc	Am beginning to talk about how scientific ideas have changed over time. Am beginning to explain the positive and negative effects of scientific development. Am beginning to see how science is useful in	Can talk about how scientific ideas have changed over time. Can explain the positive and negative effects of scientific development. Can see how science is useful in everyday life. Can say which parts of our lives rely

	I can say how science helps us in our daily lives. I can say how science can be dangerous eg electricity can give you a shock.	helps us in our daily lives. I can say how science can be dangerous eg electricity can give you a shock.	computers in schools, hospitals etc. I can begin to understand risk in science.	I understand there is some risk in science.	everyday life. Am beginning to say which parts of our lives rely on science. I am beginning to see how science is useful in lots of different ways. I am beginning to say which parts of our lives rely on science. I am beginning to explain the positive and negative effects of scientific developments.	on science. I can see how science is useful in lots of different ways. I can say which parts of our lives rely on science. I can explain the positive and negative effects of scientific Developments.