



South Lake Primary School - Progression of learning in Science (Disciplinary Knowledge)

Nursery

| | PLANNING | | EXPERIMENTING AND OBSERVING | | RECORDING | | CONCLUDING AND EVALUATING | |
|---------------|--|--|--|--|--|--|---------------------------|--|
| | Asking Questions | Planning Detail | Using Equipment | Making Observations | Presenting Evidence | Drawing Conclusions | Explaining Evidence | Evaluating Outcomes |
| TERM 1 | Explore different materials freely in order to develop their ideas about how to use them and what to make. | The Natural World: Explore how things work. | Skip, hop, stand on one leg and hold a pose for a game like musical statues. Sensory play, dough, disco and body movements. The Natural World: Use all senses in exploring natural objects. | Recognising, representing, comparing, chanting, subsidising, counting objects and counting on a 5 frame. Begins to show interest in and describe the texture of things. Tap out simple repeated rhythms. | Mark making. The Natural World: Talk about what they see. The Natural World: Talk about how they have changed (e.g. my top is too small; I've got bigger). | Shows awareness of time (e.g. stating next is lunchtime). Making connections between the features of their family and other families. | | |
| TERM 2 | Understand 'why' questions. | Select and use activities and resources, with help when needed. Develop their own ideas and then decide which materials to use to express them. | Continue to develop their movement, balancing, riding (scooters, trikes and bikes) and ball skills. Continue to strengthen muscles needed for both gross and fine skills. Join different materials and explore different textures. | Recognising, representing, comparing, chanting, subsidising, counting objects and counting on a 5 frame. Capacity – say whether something is full, empty or order containers. | The Natural World: Talk about what they see and experience outside using a wide vocabulary. The Natural World: Explore and talk about the different forces they can feel. The Natural World: Talk about the differences between materials. | To develop a positive attitude about the differences between people. | | Find solutions to conflicts with adult support |
| Term 3 | Explore colour and colour mixing. | Pretend play gives many opportunities for children to focus their thinking, persist and plan ahead. | Continue to strengthen muscles needed for both gross and fine skills. Use available resources to create props to support role play. | Recognising, representing, comparing, chanting, subsidising, counting objects and counting on a 5 frame. To compare 2 items for weight saying which one is heavy and which one is light. | The Natural World: Talk about how things are changing within a season (e.g. It's colder). Use drawing to represent ideas like movement or loud noises. | Continue to develop a positive attitude about the differences between people. | | Be able to express a point of view and to debate when they disagree with an adult or a friend, using words as well as actions. |



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Reception

| | PLANNING | | EXPERIMENTING AND OBSERVING | | RECORDING | | CONCLUDING AND EVALUATING | |
|---------------|---|--|---|---|---|--|---|---|
| | Asking Questions | Planning Detail | Using Equipment | Making Observations | Presenting Evidence | Drawing Conclusions | Explaining Evidence | Evaluating Outcomes |
| TERM 1 | Asks questions. | Will chose the resources they need for their selected activities. They say when they do or don't need help. Create collaboratively, sharing ideas, resources and skills. | Revise and refine the fundamental movement skills they have already acquired: rolling, crawling, walking, jumping, running hopping, skipping, climbing. Develop the overall body strength, co-ordination, balance and agility needed to engage successfully with future physical education sessions and other physical disciplines. Children to begin to develop holding scissors correctly and making independent attempts to use them. Holds books correctly and handles with care. Continue to strengthen muscles needed for both gross and fine skills. Measurement. | Matching and sorting. Comparing amounts. Counting by rote / counting out loud. Compare size, mass and capacity. Exploring patterns simple and complex. Comparing shapes. | Mark making in different areas of the classroom. Comparing, representing and composing 1, 2, 3, 4, 5. Accurately draw a person, no longer drawing cephalopods. Show accuracy in proportion when drawing independently and to illustrate their work. Explore and engage in music making and dance, performing solo or in groups. | 1 more / 1 less. Night and day time. | Say why they like some activities more than others. | Can listen to others. Return to and build on their previous learning, refining ideas and developing their ability to represent them. |
| TERM 2 | Ideas and thoughts are shared in sentences. | They work as part of a group or class and understand and follow the rules. Use talk to work through problems. | Confidently and safely use a range of large and small apparatus indoors and outside, alone and in a group. | Comparing groups up to 10. | The Natural World: Talk about the differences between materials and changes they notice. Talk about how two colours can create a new colour and experiment to create these. | Watch and talk about dance and performance art, expressing their feelings and responses. | | Show resilience and perseverance in the face of challenge. |
| Term 3 | Ask questions to find out more and to check they understand what has been said to them. Continues to explore colour and colour mixing independently. | Making relationships: children play co-operatively, taking turns with others. They take account of one another's ideas about how to organise their activity. Self-regulation and executive function: | Experience and manipulate clay and textures and create a hand-finished pot using coil/pinch techniques. | Articulate their ideas and thoughts in well-formed sentences. Making simple patterns. Create simple representations of events, people and objects. | Listen attentively, move to and talk about music, expressing their feelings and responses. | Listen attentively, move to and talk about music, expressing their feelings and responses. | Explain how things work and why they might happen. | Use talk to help work out problems and organise thinking in activities. |



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| Y1 | PLANNING | | EXPERIMENTING AND OBSERVING | | RECORDING | | CONCLUDING AND EVALUATING | |
|----|--|---|---|--|---|--|--|---|
| | Skills: Asking simple questions and recognising that they can be answered in different ways | | Skills: Observing closely, using simple equipment Skills: Performing simple tests Skills: Identifying and classifying | | Skills: Gathering and recording data to help in answering questions | | Skills: Using their observations and ideas to suggest answers to questions | |
| | Asking Questions | Planning Detail | Using Equipment | Making Observations | Presenting Evidence | Drawing Conclusions | Explaining Evidence | Evaluating Outcomes |
| | Recognises the difference between a statement and a question. Begins to shape questions using different question stems. | With guidance, decides which questions can be answered practically and which cannot. With guidance, suggests next step, or a sequence of steps, in a plan. | Begins to choose appropriate equipment to use to make observations and follows simple instructions for using it correctly and safely. With support, begins to use basic equipment for measuring length or mass, in non-standard units. | Makes relevant observations in familiar contexts. With support, takes some non-standard measurements. Begins to group familiar items according to their properties. With support, uses simple identification keys and reference guides to identify items. | Uses drawings and labels to present evidence. With support, uses prepared simple tables and charts, including ICT forms. With support, uses scientific vocabulary in presenting results. | Describes simple observations of an object or objects or of an event and, with support, makes a simple comparison. | With support, recognises the links between cause and effect in simple, familiar situations. | Reviews their work and, with support, recognises some of the difficulties encountered. |
| Y2 | With support, suggest own questions that they might investigate. | Decides independently, simple questions that could be answered practically and some that cannot. Suggests next step, or a sequence of steps, in a plan. | Chooses appropriate equipment from a selection and follows instructions for using it, sometimes working independently of adult support. Begins to use basic equipment for measuring length or mass, in standard units. | Makes relevant observations. Takes non-standard measurements and begins to take standard measurements. Groups items according to their properties. Uses identification keys and reference guides to identify items. | With support, sequences results Uses drawings and labels to present evidence. Uses prepared tables and block graphs, including ICT forms. Begins to independently use scientific vocabulary in presenting results. | Describes what has happened, making comparisons where appropriate. | Recognises the link between cause and effect in simple, familiar situations. Begins to notice simple patterns in results. | Reviews their work and recognises some of the difficulties encountered. With support, suggests how any difficulties might have been avoided. |



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| Y3 | PLANNING | | EXPERIMENTING AND OBSERVING | | RECORDING | | CONCLUDING AND EVALUATING | |
|----|---|--|--|--|--|--|---|---|
| | Skills: Asking relevant questions and using different types of scientific enquiries to answer them Skills: Setting up simple practical enquiries, comparative and fair tests | | Skills: Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Skills: Identifying differences, similarities or changes related to simple scientific ideas and processes | | Skills: Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Skills: Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables | | Skills: Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Skills: Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Skills: Using straightforward scientific evidence to answer questions or to support their findings | |
| | Asking Questions | Planning Detail | Using Equipment | Making Observations | Presenting Evidence | Drawing Conclusions | Explaining Evidence | Evaluating Outcomes |
| | Begins to ask questions independently. Begins to generate own ideas to explore through scientific enquiry. | With support, recognises when to answer a question by using a fair test method and when other methods might be needed e.g. through a survey, diary/log or research. In a fair test, identifies what to keep the same and sometimes knows what to change and what to measure. | Selects appropriately, from a wider range of equipment, which items to use in an investigation. Uses basic equipment correctly, safely and with increasing accuracy. | Makes relevant observations throughout an investigation. Uses standard measuring equipment for quantities, such as volume and temperature. With support, recognises differences, similarities and changes | With support, begins to gather, record, classify and present data in a variety of ways to help in answering questions. Sometimes creates own tables and bar charts, using ICT where appropriate. Uses simple scientific vocabulary in presenting results. | Reports on findings from enquiries, including oral and written, displays or presentations of results and conclusions. Makes a general statement about simple patterns they notice in a set of results. | Provides explanations for simple patterns in results, referring to everyday experiences when explaining reasoning. | Suggests how an enquiry might be improved. With support, recognises some of the limitations and significance of evidence. |
| Y4 | Asks questions independently. Offers ideas for a range of scientific enquiry. With support, improves the focus of questions to clarify their scientific purpose. | Knows when to answer a question by using a fair test method and when better evidence could be generated in other ways, e.g. through a survey, diary/log or research. Sets up a fair test, controlling the variables, knowing what to keep the same or change, knowing what to measure or observe. | Uses a wide range of equipment for example thermometers and data loggers, correctly, safely, and accurately. Deals with most equipment difficulties independently before asking for help if necessary. | Chooses to make a series of observations that will add to the evidence they collect while investigating. With support, takes accurate readings on measuring equipment, recognising when to repeat them. Recognises differences, similarities and changes and is able to group items accordingly. | Selects the most appropriate way, from a choice given, to present evidence they have collected. Records findings using drawings, labelled diagrams, bar charts, tables and graphs, using ICT where appropriate. Uses simple scientific language effectively to communicate outcomes. | Makes a comparative statement, sometimes referring to the factors under investigation. Explains differences, similarities, or changes related to simple scientific ideas and processes. Uses straightforward scientific evidence to answer questions or to support their findings. | Relates explanations of patterns in results to scientific knowledge and understanding when explaining reasoning. | Suggest how much to trust results, identifying some of the limitations of evidence. Suggests new questions and predictions for setting up further tests. |



| Y5 | PLANNING | | EXPERIMENTING AND OBSERVING | | RECORDING | | CONCLUDING AND EVALUATING | |
|----|---|---|--|---|---|--|--|---|
| | Skills: Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary | | Skills: Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate | | Skills: Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | | Skills: Using test results to make predictions to set up further comparative and fair tests Skills: 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 Skills: Identifying scientific evidence that has been used to support or refute ideas or arguments | |
| | Asking Questions | Planning Detail | Using Equipment | Making Observations | Presenting Evidence | Drawing Conclusions | Explaining Evidence | Evaluating Outcomes |
| | <p>Independently asks questions that begin to link together enquiry methods from a range of scientific concepts.</p> <p>Offers ideas for scientific enquiry, which have a clear scientific purpose.</p> | <p>Identifies the most appropriate enquiry methods to use to generate evidence needed to solve problems and answer scientific questions.</p> <p>Plans familiar enquiry types in appropriate detail.</p> | <p>Selects the most appropriate equipment to use in a range of contexts and enquiries.</p> <p>Takes repeated measurements using a range of science equipment with increasing accuracy and precision.</p> | <p>Chooses to make a series of observations or measurements that will add to the quality of the evidence collected while investigating.</p> | <p>Records data and results of increasing complexity using scientific diagrams, classification keys, tables, bar and line graphs and models.</p> <p>Communicates findings in written form, displays and uses other forms of presentation.</p> <p>Uses scientific language to communicate detailed analysis.</p> | <p>Where appropriate, makes a comparative statement, describing relationships between factors being investigated.</p> <p>Uses simple models to help describe scientific ideas.</p> | <p>Relates explanations of evidence gathered to scientific knowledge and understanding.</p> <p>With support, makes generalisation observations about what the evidence seems to indicate.</p> | <p>Recognises some of the limitations of their evidence and can suggest why it should not be trusted.</p> <p>Uses test results to set up further comparative tests.</p> |



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Y6

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|--|--|--|--|--|--|---|---|
| Skills: Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary | | Skills: Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate | | Skills: Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | Skills: Using test results to make predictions to set up further comparative and fair tests Skills: 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 Skills: Identifying scientific evidence that has been used to support or refute ideas or arguments | | |
| Asking Questions | Planning Detail | Using Equipment | Making Observations | Presenting Evidence | Drawing Conclusions | Explaining Evidence | Evaluating Outcomes |
| <p>Asks well-constructed questions to investigate, which draw upon the enquiry knowledge obtained from a range of prior scientific learning.</p> <p>Recognises scientific questions that do not yet have definitive answers.</p> | <p>Selects methods to use to solve problems or answer questions, including a full range of enquiry methods, which are planned in detail.</p> <p>Begins to think about new or alternative ways to undertake scientific enquiry, justifying their thought processes.</p> | <p>Independently equipment accurately, safely and appropriately for the scientific enquiry being undertaken.</p> <p>Explains why particular pieces of equipment or information sources will provide better quality evidence.</p> | <p>Repeats sets of observations or measurements, where appropriate, selecting suitable ranges and intervals, to give sufficient depth of evidence.</p> | <p>Decides on the most appropriate formats to present sets of scientific data, such as using line graphs for continuous variables.</p> <p>Communicates findings in written form, across a range of genre, and uses multi-media and other forms of presentation.</p> <p>Independently uses scientific language to effectively communicate increasingly detailed analysis.</p> | <p>Draws valid conclusions that utilise more than one piece of supporting evidence.</p> <p>Uses scientific evidence to answer questions or support findings.</p> | <p>Provides explanations for differences, for repeated observations or for measurements taken, identifying reasons for any anomalies noticed.</p> <p>Makes generalisation observations about what the evidence seems to indicate.</p> | <p>Evaluates the effectiveness of their working methods, making practical suggestions for improving them.</p> <p>Identifies scientific evidence that has been used to support or refute ideas or arguments.</p> |