St. Peter's CE Primary Academy

Science Curriculum Progression of Skills

At St Peter's we believe that all children should be enthused by the ever-changing world and be equipped with skills that allow them to flourish.

EYFS

Working Scientifically concepts

Asking questions	**Making predictions**	**Setting up tests**	**Observing and measuring**	**Recording data**	**Interpreting and communicating results**	**Evaluating**
Ask questions to clarify understanding and aspects of their familiar world e.g. place they live or the natural world. Question why things happen.	Show curiosity about objects, events and people.	Find ways to solve problems/find new ways to do things. Take risks through trial and error. Choose the resources they need for a chosen activity from their environment.	Explore the natural world making observations (e.g seasons) including similarities and differences Observe and describe what they see using everyday language. Take measurements initially by comparisons then begin to use non-standard units. Make links and notice patterns in their experiences. Explore different equipment and find out what its uses are.	Draw pictures of objects in their own environment. Take photos of things of interest to them. Start to mark-make to record results. Sort in more than 2 groups using familiar categories. Create a class chart using pictures and objects.	Offer explanations for why things happen- making use of recently introduced scientific vocabulary. Develop vocabulary which meets the breadth of their experiences Develop own narrative and explanations by connecting ideas or events.	Talk about what they have found and say what worked well. Describe how things work in simple terms and make basic alterations and suggest things that did not work Come up with alternative ways of doing things through exploration. Say or indicate by smiley faces/scale if they have achieved the learning objective.

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Year 1/2
Working Scientifically concepts

Asking questions	Making predictions	Setting up tests	Observing and measuring	Recording data	Interpreting and communicating results	Evaluating
Year 1 Explore the world around them and raise own questions. **Begin to ask simple questions** and use simple secondary sources to find answers. Ask yes and no questions to sort and classify. **Year 2** **Ask simple questions relevant to the topic and use more than one secondary source to find answers.**	**Year 1** Make basic predictions over things they can see or their own ideas. Use some scientific vocabulary. **Year 2** Draw on knowledge from observations to make a prediction. Begin to test predictions and later answer questions.	**Year 1** Begin to recognise different ways in which they may answer scientific questions. Experience different types of enquiry including practical activities. Use practical resources provided and suggest some of their own. Can carry out simple tests to classify, compare or pattern seek. **Year 2**	**Year 1** Use senses with the aid of simple equipment to make observations and take measurements. With help and prompting, observe changes over time and describe the changes. Identify, group and compare using observations, video and photographs. Use discrete and continuous data to manageable common standard units.	**Year 1** Begin to show accuracy in drawings and simple labels. Use key scientific vocabulary in their findings. Use prepared tables to record results. Add marks to a chart to collect data. Use sorting rings and Venn diagrams to classify in more than 2 groups answering yes or no questions.	**Year 1** Use evidence from simple tests when answering questions. Begin to notice patterns and relationships. Talk about what they have found out and how they found it out. Make comparisons from data. **Year 2** Communicate findings to an audience using relevant scientific language and illustrations.	**Year 1** With prompting, suggest improvements to enquiries. Talk about some changes that could be made. Use simple success ladders to evaluate their tests or understanding against the learning objective. **Year 2** Suggest some things that could be changed and evaluate why

Use a range of question stems. **Know their questions can be answered in different ways.**		Within a planning frame, can suggest resources they may need for the test. **Carry out simple tests** linked to all types of enquiry.	Use non-standard measures to compare. **<u>Year 2</u>** **Observe closely, using simple equipment**. Identify a variety of plants and animals using observations. Observe similarities and differences between the growth stages of different plants. Compare objects based on observable features. **Use observations and ideas to suggest answers to questions**. Observe through video, first-hand observations and measurement how different animals including humans grow and offer explanations.	Complete a prepared block graph/pictogram. **<u>Year 2</u>** **Gather and record data to help in answering questions.** Record observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. Count results using a tally chart. **Can identify and classify.** Explain reasoning clearly when sorting into groups. Record using prepared vertical bar charts.	Explain findings, identifying casual relationships and patterns in results, including those that do not fit the pattern. Draw a basic conclusion using scientific knowledge, observations and comparisons. Use results of investigations to answer enquiry questions.	things went wrong. Use success ladders with multiple criteria to evaluate the test or their understanding against the learning objective.

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Year 3/4
Working Scientifically concepts

Asking questions	**Making predictions**	**Setting up tests**	**Observing and measuring**	**Recording data**	**Interpreting and communicating results**	**Evaluating**
Year 3 Raise questions about the world around them and why things happen the way they do. Write a range of questions linked to a topic. Identify new questions from data. Raise questions and carry out tests with support to find things out. Know how and when to use secondary sources to answer questions that cannot be answered through practical enquiry.	**Year 3** Make predictions from questions posed. Make further predictions from what is observed or tested. **Year 4** Use subject knowledge or research to make predictions. Raise further predictions from results based on patterns, then make predictions for new values.	**Year 3** Carry out a range of scientific investigations linked to all types of enquiry. **Set up practical enquiries: comparative, and fair tests using planning frame.** Investigate and answer own questions linked to the shared planning frame. Understand there are different variables to be controlled. Follow basic instructions to conduct an	**Year 3** **Make systematic and careful observations** and decide how to record them to answer a question. Collect data from own observations and measurements. Observe and note patterns in relationships **Take accurate measurements using standard units for measuring time, length, capacity and temperature.** Begin to use a range of scales.	**Year 3** Record findings using scientifical language, drawings and **labelled diagrams.** Complete a prepared table where they add headings and results. Use simple classification keys and Venn diagram with 2 sorting criteria and 1 intersecting and give reasons for their sorting criteria. Begin to use Carroll diagrams.	**Year 3**. Discuss ideas and communicate findings in ways appropriate for different audiences orally and written. Make comparisons using results and ensure the conclusion is consistent with the data. Adjust opinion and predictions based on results. Give reasons for results including any anomalies. Use simple scientific language. Apply knowledge of	**Year 3** Suggest improvements and raise further questions Use evidence and subject knowledge to refute statements. Make basic statements about what worked well and what they would change. Use success ladders confidently to evaluate tests against multiple criteria and suggest simple next steps.

Carry out research using a small range of secondary sources. **<u>Year 4</u>** Decide how to gather evidence to answer questions. Raise questions to help identify and group. Identify appropriate information from secondary sources to help answer questions.		investigation. Use a range of equipment with support. **<u>Year 4</u>** Identify the type of enquiry needed to answer a question. Select from a range of resources to perform fair tests. Plan investigations more independently, identifying the variables and what needs measuring. Choose their own method to carry out an investigation.	Read digital measurements from data loggers appropriately. **<u>Year 4</u>** **Make systematic and careful observations** Use observations to ask questions and group objects using classification keys. Observe closely and describe scientific processes. Observe and record period of time. **Identify differences, similarities or changes related to simple scientific ideas or processes.**	Produce vertical and horizonal bar charts adding own labels and bars. **<u>Year 4</u>** With support, present the same data in different ways- choice over recording. **Create own tables** with own headings. Record using **classification keys** and Venn and Carroll diagrams for classification, choosing own criteria. Can use discrete and continuous data, presenting data in a line/scatter graph. Can construct a pictogram/bar chart independently.	the topic when evaluating. Explain any amendments and how this impacted the investigation/test. **<u>Year 4</u>** Look for casual relationships in data and identify evidence that refutes/supports ideas. **Report on findings to an audience orally and in writing using appropriate scientific vocabulary for a range of audiences.** Use evidence to suggest values for different items tested using the same method. **Draw conclusions based on straightforward evidence and current subject knowledge to support their findings.**	**<u>Year 4</u>** Begin to evaluate different aspects of their enquiries such as equipment. Use different charts to evaluate such as ranking scales, star diagrams and success ladders. Suggest points for development based on the weakest aspects.

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Year 5/6
Working Scientifically concepts

Asking questions	**Making predictions**	**Setting up tests**	**Observing and measuring**	**Recording data**	**Interpreting and communicating results**	**Evaluating**
Year 5 Use their scientific experiences to explore ideas and raise different questions. Create further questions from enquiries to investigate. Independently use secondary sources to find relevant facts about a topic. Raise further questions from enquiries/research. **Year 6** Can raise questions about a range of phenomena.	**Year 5** Use subject knowledge, observations, or previous learning to make predictions. Add further detail and explanations for their predictions when prompted. Base predictions on previous scientific enquiry. Identify a range of variables which could affect their investigation. **Year 6** Develop predictions not based on results of a scientific	**Year 5** **Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and changed.** Identify independent and dependent variables to identify causal relationships. Understand what type of scientific enquiry is needed to answer and prove/disprove scientific questions or phenomenon.	**Year 5** Make own decisions about what to observe. Observe and compare difference variables, including those contrasting environments. Observe changes over a period of time. **Take repeat measurements where appropriate.** Choose the middle value or find the mean average. Select measuring equipment to give most precise results.	**Year 5** Decide how to record data from a choice of familiar approaches. **Present results in a variety of ways to help in answering questions.** Record results systematically, indicating cause and effect. Use and develop **classification keys** and other information records to identify, classify and describe. Use line or scatter graphs to calculate	**Year 5** Interpret data to generate simple comparative statements based on evidence. Use results to draw conclusions and identify external factors that cannot be controlled. Use scientific language and illustrations to discuss, communicate and justify scientific ideas. Use comparative statements to explain results and how things work.	**Year 5** Evaluate and decide when further observations, comparative and fair tests might be needed. Evaluate different aspects of their enquiries such as equipment and accuracy of measurements. Relate their results to the question and state if their test has enabled them to answer it. Use a range of charts to evaluate such as ranking

Can ask questions about a range of materials in order to support classification. Can raise questions to further prove a scientific enquiry.	enquiry but using own ideas and subject knowledge. Use evidence to support predictions. Gather evidence through practical science to support predictions. **Use test result to make predictions to set up further comparative and fair tests.**	**<u>Year 6</u>** Choose the type of enquiry needed to carry out an investigation. Pose and answer own questions, controlling variables where necessary independently. Decide whether the sample size needs to be increased for validity. Understand how to gather data to prove a prediction. Identify a range of factors which may affect their investigation.	Explain advantages and disadvantages of different measuring equipment. Make a range of quantitative measurements. **<u>Year 6</u>** Children answer their own and others' questions on observations they have made using evidence. Observe and raise questions about animals and how they are adapted to their environment. **Take measurements, using a range of scientific equipment, with increasing accuracy and precision.** Record measurements to 3dp.	range in a set of data. Produce **bar graphs** with various increments. **<u>Year 6</u>** Present the same data in different ways to help answering the question. Record data and results with increasing complexity. Use scientific diagrams and labels. calculate the mean and range of a set of data. Use multiple data sets. **Use and produce classification keys independently** by posing questions. Independently collect data and produce **scatter and line graphs** using various scales and multiple data. Create **bar charts**	**<u>Year 6</u>** **Use oral and written forms such as displays to report conclusions, casual relationships and give an explanation of the degree of trust in their results.** Make suggestions for ideas that can be explored using pattern seeking. **Use data to refute or support ideas or arguments.** Focus on scientific reasons for overall pattern rather than a comparison. Uses labelled diagrams to support their explanation. Use ideas from secondary sources to support their ideas, choosing appropriate websites.	scales, star diagrams including those with negative numbers. Suggest next steps based on the weakest aspects and state how this will help them or the test progress or give different results. **<u>Year 6</u>** Describe and evaluate own and other people's scientific ideas using evidence from a range of sources. Evaluate own choice of method, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources. Use scientific language and evaluate **how**

				and pie charts to present data.		enquiry has answered the question.