Repton Manor Primary School:

Subject Specific Concepts and the reasons for our choices

Subject: Science

Within our Science curriculum two distinct types of knowledge are taught:

- Substantive Knowledge.
- Disciplinary Knowledge: Working Scientifically - how scientists work and learn.

Key skills which are developed throughout the entire Science Curriculum:

- Vocabulary and language development.

Concept	Why learn about this concept?	Year group studied
Creativity	Creativity is the ability to look at concepts in a wide variety of different ways, discussing new ways of thinking, acting or implementing. Creativity encompasses artistic and intellectual inventiveness. Children are able to think creatively in all areas of Science and this is an overarching concept for the subject. Creativity is a Repton key concept because we believe that creativity is the basis of Scientific knowledge and exploration. It is creativity that has led to so many Scientific discoveries throughout our time on this planet and we encourage our children at Repton to develop such creativity that they can make discoveries of their own.	All
Questioning	Questioning is the ability to enthusiastically show engagement with knowledge. Children are able to use their questions to delve deeper into a concept, exploring the processes, knowledge and the systems behind it. Questioning allows children to discuss what they already know and what they have yet to discover, taking their specific interests into key consideration. Questioning is a Repton key concept because we believe that children should be free to carve their own paths into scientific discovery. Questioning makes Science meaningful as children are able to discover and share knowledge that is important to them. At Repton, we believe that scientific enquiry should always be led by children's questioning.	All
Hypothesis	A hypothesis is an idea which is suggested or explored as a possible explanation for a particular situation or condition, but which has not yet been proved to be correct. Children make hypotheses based on their existing knowledge in order to explore this further, or discover something new. Hypothesis is a Repton key concept because we believe that children need to learn from previous beliefs, misconceptions and knowledge. Without exploring what has been previously thought, children cannot explore how scientific ideas and concepts are developed upon and changed.	All
Predicting	Predicting is the ability to look at what we already know and form an opinion of what might happen next. Prediction allows children to group prior knowledge in order to come to reasoned conclusions. Predicting is a Repton key concept because we believe that children should have the opportunity to develop, change and build upon knowledge by exploring the unknown. Predictions allow for unknown knowledge to be challenged and explored and allow children to see how predictions can be created and informed from the known.	All
Exploring Variables	Variables form the basis of all scientific experiments. They must be carefully considered in order to make the experiment fair and accurate. Variables are elements of experiments that are changed, stay the same or are measured.	All

	They allow an experiment to be repeated several times in order to test different variables. Exploring variables is a Repton key concept because we believe that children should be able to develop and build their own scientific experiments. Without considering the variables of the experiment, the results would be inaccurate and differ from person to person. Variables pull together Science as an exact art and allow our results to be reliable and well informed.	
Developing Experiments	The ability to develop experiments is to be able to choose the most reliable and accurate way to test and measure a prediction or hypothesis. Experiments are used to challenge existing knowledge or discover something new. Developing experiments is a Repton key concept because we believe that children should be able to acquire scientific knowledge for themselves. The ability to design and develop their own experiments allow our children at Repton to take ownership of their learning. The thrill of discovering something for yourself also makes that learning memorable and can help to embed it easily.	All
Analysing and Presenting Data	The ability to analyse data is to carefully consider what has been learnt from a study, experiment or gathering of data. Data is information learnt and collected from scientific enquiry. Data can be presented in a wide range of ways, using age appropriate techniques and skills from learning in Mathematics such as tables, charts and graphs. Analysing and presenting data is a Repton key concept because we believe that children should explore data that they have gathered and be able to present this in a wide variety of ways. This skill allows children to be able to present ideas and findings in a logical and clear way and therefore leads into drawing conclusions. We believe that Repton children should be equipped with the knowledge and skills to explain their reasoning and back up statements with data as this ability is a key life skill and can help them in later life.	All
Drawing Conclusions	Conclusions are made from careful considerations of scientific findings and data. They draw together all known elements to create a conclusion for the question or hypothesis being explored. Children are able to discuss in conclusions whether their initial ideas and predictions were correct or if they have been contradicted. They can reflect upon what has been learnt and this can lead into adaptation and forward thinking. Drawing conclusions is a Repton key concept because we believe children should have the opportunity to reflect upon and consider learning and how this has changed and been adapted. Our children at Repton will have the ability to critically analyse experiments, data and findings in order to draw solid conclusions. No learning is invaluable and through conclusions, we can also discuss mistakes and opportunities for improvements.	All
Adaptation and Forward Thinking	Adaptations are made when new knowledge and thoughts appear that provide better explanations, clearer explanations or results or a more efficient way of working. Adaptations can be made throughout the scientific process and are encouraged at Repton as the acquisition of knowledge is fluid. Forward thinking allows children to think about the future impact of their knowledge and what they may do because of this. Adaptation and forward thinking is a Repton key concept because we believe children should be trusted in their autonomy and have the ability to change their minds or direction based on their discoveries. Our children at Repton will be given plentiful opportunities to reflect upon what they have learnt already and discuss and direct how this informs their decisions for the future. This could be through making adaptations to an experiment or reflecting upon a conclusion that still needs exploring or developing.	All