



## Subject Specific Concepts and the reasons for our choices

### Subject: Computing

Within our Computing curriculum there are 3 content areas which are interconnected:

- Computer Science: The knowledge of computers and computation including data, system architecture, algorithms and programming. It is the core of computing, underpinning the whole subject.
- Information Technology: Digital artefacts and computing contexts.
- Digital Literacy: The knowledge children need to use digital devices safely, effectively and discerningly.

Two types of knowledge are taught:

- Declarative knowledge: Knowledge of facts, concepts and how these are related.
- Procedural knowledge: Knowledge of methods and processes.

Concept	Why learn about this concept?	Year group studied
Systems and Networks	<p>Computer Systems as a concept can be explained as a combination of both hardware and software working together to complete or perform a task. Hardware is the physical components of a computer and software is the programs that run on a computer. Computer Networks as a concept is a number of computers linked together enabling them to share hardware, software and data. Connecting computers to form computer networks and the internet (which is a huge network of networks) has substantial impacts on the world.</p> <p>Computer Systems and Networks is a Repton key concept because we believe computers are central to many everyday tasks and routines, whether they are stand-alone, connected in a local network or plugged into the internet. It is important that our children have the knowledge of how these devices work, in order to appreciate the role that computers and networks play in everyday life.</p>	All
Algorithms and Programming	<p>Programming as a concept can be explained as the process of writing instructions that tell the computer how to perform a particular task given to it. These instructions are made up of algorithms. An algorithm is a set of instructions to follow in order to solve a problem or complete a task. A computer program translates those instructions into a language that computers can understand: this code tells the computer how to behave and what actions to perform (this is known as coding).</p> <p>Programming is a Repton key concept because we believe that programming and algorithms are fundamental to the primary computing curriculum. We believe in teaching our children the skills they need to think computationally, so that they can harness the power of computers and extend their capabilities.</p>	All
Creating Media	<p>Creating Media as a concept can be explained as the computer-assisted integration of text, drawings, still and moving images (videos) graphics, audio, animation, and any other media in which any type of information can be expressed, stored, communicated, and processed digitally.</p> <p>Creating Media is a Repton key concept because we believe that it is vital that our children are confident and competent in planning, creating and evaluating a range of media which enables them to participate fully in an</p>	All

	increasingly digital world. At Repton, we believe that through the teaching and learning in multimedia, children can be encouraged to work independently and in groups, expressing their knowledge in multiple ways, solve problems, revise their own work and construct knowledge.	
Data and Information	<p>Data and Information as a concept can be explained as the process of gathering, recording, and presenting information in a way that is helpful to analyse, make predictions and choices. Computer data is information processed or stored by a computer.</p> <p>Data and Information is a Repton key concept because we believe that handling data plays an important role within our computing curriculum as it encompasses real-world situations and aids the development of critical thinking skills. Building our children's ability to handle data, allows our children to develop several different but related skills such as questioning, analysing and presenting, all of which will reap benefits beyond their time in academia.</p>	All
<b>The following concepts run throughout the whole Computing Curriculum:</b>		
Word Processing	<p>Word processing as a concept can be explained as the act of using a computer to create, edit, save and print documents.</p> <p>Word processing is a Repton key concept because we believe that word processing plays an integral part in everyday life, not only as children but also as adults. Being proficient in word processing removes boundaries and opens doors to greater opportunities.</p>	All
Computational thinking	<p>Computational thinking allows us to take a complex problem, understand what the problem is and develop possible solutions. We can present these solutions in a way that a computer, a human, or both, can understand. Computational thinking involves several thinking skills, including: logical reasoning, abstraction and decomposition. Logical reasoning refers to the process of working step-by-step to understand a problem and develop a solution (e.g. the decision-making process used in programming and writing algorithms). Abstraction refers to the process of focusing on the important information only, ignoring irrelevant detail. Decomposition is the process of taking a complex problem or task and breaking it into simpler parts and solving each part separately.</p> <p>Computational thinking is a Repton key concept because we believe that before you can use a computer to solve problems, you need to pick those problems apart and decide how to approach them. By developing computational thinking for our children, we are providing our children with a range of thinking skills that they can draw upon to find solutions to problems and to create systems to drive their learning forward, which may be aided further with the use of a computer.</p>	All
Debugging	<p>Debugging as a concept can be explained as the process of identifying and removing errors from computer hardware or software. In computer programming, debugging is a multistep process that involves identifying a problem, isolating the source of the problem, and then either correcting the problem or determining a way to work around it.</p> <p>Debugging is a Repton key concept because we believe that it is important that our children develop the ability to independently identify problems and find ways to fix or work around the issue. We believe that this is a life skill that extends beyond the Computing Curriculum.</p>	All
Communication	<p>Communication as a concept can be explained as the exchange of data, information and/or instructions between two or more computing devices.</p> <p>Communication is a Repton key concept because our children are living in an evolving technological world in which computing is used heavily for communication. Our children therefore need the knowledge and skills required to communicate successfully and safely in a digital world.</p>	KS2

E-Safety / Online Safety	<p>E-Safety as a concept can be defined as the safe and responsible use of technology. This includes the use of the internet and also other means of communication using electronic media (eg text messages, gaming devices, email etc).</p> <p>Online Safety is a Repton key concept because we believe that our children need to be equipped with the appropriate knowledge and skills to keep themselves safe when using technology. This also includes knowing what to do should we encounter problems or things that make us feel uncomfortable.</p>	All
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