



Progression of Concepts, Knowledge and Skills: Computing

Overview of Concepts	Early Years	Key Stage 1	Key Stage 2
Using Technology	<p>Develop their small motor skills so that they can use a range of tools competently, safely and confidently</p> <p>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</p> <p>Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.</p>	<p>Begin to develop their creativity using technology through recording sound.</p> <p>Begin to understand the particular purposes technology can be used for.</p> <p>Develop their skills in typing, selecting tools and organising information.</p> <p>Begin to explore expressing information in tables, sorting and organising information for others to be able to understand.</p>	<p>Begin to look at new software for a range of purposes.</p> <p>Begin to look more into multimedia broadcasting, They become more confident in post production.</p> <p>Select the correct method to display data and use software such as spreadsheets.</p>
Using the Internet	<p>Explain the reasons for rules, know right from wrong and try to behave accordingly.</p>	<p>Begin to make links to how they use technology outside of the classroom. They begin to think about the benefits of using technology in their lives, making links to learning about online safety.</p>	<p>Use safe search terms on trusted search engines, and evaluate websites based on layout and information. They become more confident in understanding the web, adverts and the reliability of websites.</p>
Programming and Control	<p>Develop their small motor skills so</p>	<p>Begin to understand their</p>	<p>Build on their programming skills</p>

	<p>that they can use a range of tools competently, safely and confidently</p>	<p>influence on technology by developing their programming skills to determine output. They begin to understand that an algorithm is a series of steps for solving problems and a code is a series of steps that machines can execute. They begin to explore debugging, predicting when codes may not work and changing them</p>	<p>by using new systems such as a flowchart. They continue to break down problems and create algorithms to solve them. They are able to explain the outcome of an algorithm with confidence and accuracy.</p>
<p>Online Safety</p>	<p>Explain the reasons for rules, know right from wrong and try to behave accordingly.</p> <p>Know and talk about the different factors that support their overall health and wellbeing: -sensible amounts of 'screen time'</p>	<p>Begin to consider their activity on the internet and learn about ways to keep themselves safe and why it is important to do so. They also compare appropriate and inappropriate activity on the internet and decide what to do next.</p>	<p>Can identify online risks and share their knowledge of the risks and consequences for people online. They begin to think more critically about what they see online and look at the concept of fake news and false photographs.</p>

By the end of KS1 children will have:

Developed the following concepts:	Developed the following skills:	Have gained the following knowledge:
<p>Using Technology</p>	<p>Begin to independently access a laptop or iPad</p> <p>Understand the (space, enter, full stop) keys on a keyboard.</p> <p>Be able to make simple choices about which hardware is most appropriate to use and begin to explain why.</p> <p>Compare iPad & camera through discussion Begin to produce work using a laptop independently or collaboratively.</p> <p>Confidently access a laptop or iPad and save and print.</p> <p>Begin to develop familiarity with the position of letter keys. Understand how to use the shift key.</p> <p>Independently use a variety of hardware for different purposes – using an iPad, to take photos</p> <p>Create a simple database and graph Recognise the link between collecting data and creating a simple graph</p>	<p>Begin to develop understand the purpose of and begin to use a range of different technology</p> <p>Recognise common uses of information technology beyond school - mobile phones/tablets/games consoles</p> <p>Be able to discuss their use of technology at home – mobile phones, tablets, games consoles</p> <p>Begin to produce work using a laptop independently, using simple features of programs and tools</p> <p>Be able to make choices about which software is most appropriate to use.</p> <p>Begin to develop an understanding of creating presentations to organise ideas.</p> <p>Recognise common uses of information technology including at school. – discuss car park barrier, school entry fobs</p>
<p>Using the Internet</p>	<p>Be able to explore a variety of electronic information.</p> <p>Be able to navigate a simple webpage to find specific informationtext/images/video etc. and know that some are more useful than others.</p>	<p>Understand why we use the internet to answer specific questions. Understand that messages can be sent electronically in a variety of ways</p> <p>Understand a website has a unique web address and how to find menu buttons and links</p> <p>Understand that messages can be sent electronically in varying ways - send your own email, discuss text and game chat.</p>
<p>Programming and Control</p>	<p>Begin to understand the term algorithm as a set of instructions to control or command a program.</p>	<p>Understand that an algorithm is a set of instructions to achieve a goal on a program.</p>

	<p>Create and debug (correct errors) in simple programs.</p> <p>Be able to use logical reasoning to predict the behaviour of simple programs.</p>	
Online Safety	<p>Be able to use technology safely and respectfully, knowing which personal information should be kept private.</p> <p>Be aware that people online may not be who they say they are.</p> <p>Be able to use technology safely and respectfully, keeping personal information private.</p> <p>Demonstrate an age-related understanding of E Safety when communicating online.</p>	<p>Understand that the internet can be used for unkind purposes and know who to tell or what to do if they see something upsetting online – tell a trusted adult or discontinue use</p> <p>Have a developed understanding that information communicated online can be public and permanent - sending a text message or chatting on a games console.</p> <p>Begin to understand the meaning of cyberbullying and know who to tell or what to do if they see something upsetting online e.g. a trusted adult or use block/report features.</p> <p>Understand the need for a safe and secure password. Further understand that people online may not be who they say they are.</p>

By the end of Lower KS2 children will have:

Developed the following concepts:	Developed the following skills:	Have gained the following knowledge:
Using Technology	<p>Select and manipulate an image using a digital device.</p> <p>Select and manipulate sound using a digital device. Save as documents on the pupil shared area of the intranet. Use collaborative software</p> <p>Use copy, paste and cut keys to move information. Use shorthand keys too (Ctrl+C, Ctrl+V and Ctrl+Z).</p> <p>Develop typing speed and accuracy to develop competency.</p>	<p>Be able to make choices about which software or hardware is most appropriate to use and to explain.</p> <p>Use a wide range of programs to create documents and presentations – Word, PowerPoint, creating transitions, designs, fonts</p> <p>Understand the basic structure of a database and to add simple data to an excel document and use information for a bar graph.</p>

	<p>Continue to produce work using a computer, using more advanced features of programs and tools – Publisher, Creating a textbox, bullet point list, word art, headings</p> <p>Independently use a variety of hardware for different purposes e.g. creating videos using tablet software.</p> <p>Use data within spreadsheets to create graphs or present data in different ways – pie charts and line graphs</p>	
Using the Internet	<p>Be able to navigate a webpage and search independently for specific and appropriate information.</p> <p>Be able to navigate a search engine using key search terms</p> <p>Be able to skim read for relevant information and modify search key words if necessary.</p> <p>Begin to create a basic website (using google apps). These should include hyperlinks, insert, print screen, crop and previously learnt skills from other programs, copy and paste from the internet within research.</p>	<p>Understand a website has a unique web address and understand the need for accuracy.</p> <p>Understand that search results are ranked in order of relevance but may include advertising.</p>
Programming and Control	<p>Design, write and debug (correct errors) more complex algorithms that accomplish specific goals.</p> <p>Be able to work with an increasing number of variables and forms of input and output</p> <p>Sequence algorithms to enable effective program function.</p> <p>Be able to work with an increasing number of variables and forms of input and output.</p>	<p>Continue to design, write and debug (correct errors) more complex algorithms that accomplish specific goals.</p> <p>Continue to sequence algorithms and selection in programs in order to control a physical system.</p>
Online Safety	<p>Develop an understanding on why there are age restrictions within apps/games and that people online may not be who they say are.</p> <p>Know the meaning of cyberbullying and the forms it can be seen within and know who to tell or what to do if they see something upsetting online e.g. a trusted adult or use block/report features</p>	<p>Begin to understand why there are age restrictions on apps and games and that the digital consent age of 13 is related to sponsored advertising and not just the content of the app itself.</p> <p>Have an understanding that information published online is public and permanent – Discuss WhatsApp or other social media platform relevant to your class</p> <p>Understand the need for a safe and secure password.</p>

	<p>Demonstrate an age-related understanding of E Safety when communicating online.</p>	<p>Further understand that the internet is a great way to find information and communicate with people but that people online may not be who they say they are.</p> <p>Further understand that the digital consent age of 13 is related to sponsored advertising and not just the content of the app itself and the use of photos on social media.</p> <p>Have an understanding that information published online is public and permanent and be aware of privacy settings on certain websites/apps .</p>
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By the end of Upper KS2 children will have:		
Developed the following concepts:	Developed the following skills:	Have gained the following knowledge:
Using Technology	<p>Continue to produce work using a computer, using more advanced features of programs and tools e.g. use margin tools and text box links on publisher, bullet points, columns etc. on word.</p> <p>Begin to create documents and presentations using advanced features such as adding / creating sounds, hyperlinks, video timings.</p>	<p>Compare programs of a similar nature and evaluate which is most effective performing specific tasks.</p> <p>Continue to produce work using a computer, using more advanced features of programs and tools e.g. organisational features, background with audience in mind, text boxes.</p>

	<p>Use technology, including spreadsheets, to create graphs and present data in different ways using basic formulae.</p> <p>Independently manipulate an image using a complex digital device.</p> <p>Undertake market research, collecting relevant data, analysing and evaluating before presenting using a suitable software.</p> <p>Use sound editing technology to manipulate a range of sound.</p> <p>Manipulate an image using Augmented Reality (AR) on a digital device.</p>	<p>Competently create documents and presentations that serve a purpose and suit the needs of an intended audience.</p>
Using the Internet	<p>Be able to use advanced search tools.</p> <p>Be able to skim read for relevant information and identify the impact of incorrect information or data which may contain irrelevant, bias or implausible data.</p> <p>Share and exchange ideas using electronic communication e.g. email to answer questions</p> <p>To create a website showing an increasing degree of skill for a specific audience</p> <p>Be able to use advanced search tools and check the plausibility of information, understanding the impact of incorrect information.</p> <p>Create a website and analyse its effectiveness.</p>	<p>To understand the safety issues surrounding sending and receiving emails.</p> <p>Understand the issues surrounding copyright.</p> <p>Understand the issues surrounding copyright and plagiarism and the importance of acknowledging sources.</p> <p>Understand that search results are ranked in order of relevance and compare a range of sources to check validity of information.</p>
Programming and Control	<p>Be able to work with an increasing number of variables and forms of input and output.</p> <p>Be able to make choices about which software is most appropriate to use and explain why.</p> <p>Create an efficient sequence of algorithms to control a physical system.</p>	<p>Continue to design, write and debug (correct errors) more complex algorithms that accomplish specific goals.</p> <p>Continue to sequence algorithms and selection in programs in order to control a physical system.</p> <p>Problem solve using knowledge of variables to see the impact upon inputs and outputs.</p>

Online Safety

Recognise warning signals to identify that someone may not be who they say they are online. E.g. asking for personal information, photos, school, address, phone number.

Understand which kinds of behaviours constitute cyberbullying and know how to prevent or respond to it e.g. tested adult or report/block features on websites.

Know that privacy settings on websites will affect communicating and collaborating online.

Demonstrate an age-related understanding of E Safety when communicating online.

Have an understanding that information published online is public and permanent and be aware that privacy settings can be changed on websites or apps.

Use their understanding that information published online is public and permanent to underpin their use of the internet.

Develop a further understanding that the digital consent age of 13 is related to sponsored advertising and what this entails(explain sponsored advertising and how sponsors use the information) and not just the content of the app itself and the use of photos on social media.

Vocabulary

This specific vocabulary should be taught within the appropriate unit and previous learnt vocabulary be referenced to ensure children's understanding of these terms.

FSU	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
<p><u>E-safety:</u> Choices Internet Website</p> <p><u>Programming:</u> Equipment Buttons Movement</p> <p><u>Multimedia:</u> Screen Mouse Images Keyboard Paint</p> <p><u>Technology in our lives:</u> Technology Share Create Internet</p> <p><u>Data Handling:</u> Collect Set of photos Count Organise</p>	<p><u>E-Safety:</u> Rules Online Private information Email Appropriate/inappropriate sites Cyber-bullying Digital footprint Keyword searching</p> <p><u>Programming:</u> Instructions Buttons Robots Patterns Program Algorithm Sequence Debug Predict</p> <p><u>Multimedia:</u> Videos Camera stills Sounds Image bank Word bank Paint effects Templates Animation Documents</p>	<p><u>E-Safety:</u> E-safety rules Secure passwords Report abuse button Gaming Blogs</p> <p><u>Programming:</u> Sequence instructions Sequence debugging Test + improve Logo commands Sequence programming Open-ended problems Bugs in programs Complex programming</p> <p><u>Multimedia:</u> Multimedia Presentations Alignment Brush size Repeats Reflections Green screening Amend Copy Paste Creating + modifying Specific purpose Photo modifying</p>	<p><u>E-Safety:</u> Responsible online communication Informed choices Virus threats Blogs Messaging</p> <p><u>Programming:</u> Explore procedures Refine procedures Variable Hardware + software control Change inputs Different outputs Articulate solutions Commands Predicting outputs Plan, program, test & review a program</p> <p><u>Multimedia:</u> Multimedia effects Multimedia modification Transitions Hyperlinks Editing tools Refining Online sharing Audience Atmosphere Structure</p>

	<p><u>Technology in our lives:</u> Purpose Online tools Communicate Information sources Communication Purposes Website content</p> <p><u>Data Handling:</u> Photographs Video Sound Data Pictogram Digitally Capturing moments Magnified images Questions Data collection Graphs Charts Save</p>	<p><u>Technology in our lives:</u> School network Devices Computer parts Collaborate Appropriate online communication Search tools Appropriate websites Owner Different networks Information collection Reliability Owners</p> <p><u>Data Handling:</u> Questioning Database Construct Contribute Recording data Data logger Present data Database creation Database searches Inaccurate data</p>	<p><u>Technology in our lives:</u> Computing devices Internet parts Collaboration Responsibility Searching strategies Webpages Information movement Connecting devices Different audiences Research strategies Search result rankings</p> <p><u>Data Handling:</u> Spreadsheets Complex searches (and/or: </>) Problem solving Present answers Analyse information Question data Interpret Generate Process Interpret Store Present information Plausibility Appropriate data tool Interrogate Investigations</p>
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Progression of Computing Experiences

	Digital Literacy	Online Safety	Coding	Technology
EYFS	Send a class letter to an author of their choice.	As a whole class, create and share to parents a short video linked to their online safety learning.	As a whole class, create a set of simple instructions for the bee-bot to follow.	Invite parents/visitors into school linked to careers in technology or STEM.
KS1	Film and share a class story map from an appropriate literacy sequence.	Create and display a poster outlining the do's and don'ts of online safety.	In pairs, plan out and create a route using coding instructions to take bee-bots from position A to position B.	
Lower KS2	Type and publish a piece of written work linked to the Literacy curriculum using appropriate software.	Read and re-enact scenario cards linked to good online safety practice.	Using appropriate software, create a game using coding strategies.	Invite parents/visitors into school for a Q&A linked to careers in technology or STEM.
Upper KS2	Made a PowerPoint related to a foundation subject and presented it to their peers.	To plan, write and act out a scenario of good internet safety practice and present in a group to the class.	Using appropriate software, create a game using complex coding strategies.	Visit Exeter University for 'Exeter Explorers'- discovering STEM. Or equivalent depending on what experiences they are providing.