End Points for Computing

Do everything in

1 Corinthians 16:13-14

Year One

Algorithms and Programming	Data and Use of Technology	Understanding of technology
- Create a simple list of instructions using left and right, up and down. - Use beebots (or relevant applications) to plan and test a basic journey. - Begin to understand the word 'algorithm'.	- Capture images with a camera. - Record video/audio with a camera. - Find and playback any images of videos they record. - Use a touch screen to find applications.	- Be aware of the internet, what it is and some of its uses. - Search for something through a search engine. - Recognise what an email address is.

Greater Depth

- Record just their voices.
- Add filters to images they have taken.
- Know how to search for images online.
- Learn to print out any images found.

Internet Safety

- Understand how people can communicate online (e.g. email, social media, via gaming consoles)
- Know that websites sometimes include pop-ups and not to click on those.
- Know that if someone contacts them via the internet, to tell a trusted adult immediately.
- Know that if they see an inappropriate image online to tell an adult immediately.
- Know that the internet is great for information but we cannot always trust what we find.

End Points for Computing

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Year Two

Algorithms and Programming	Data and Use of Technology	Understanding of technology
- Know that when they create a list of instructions, they have made an algorithm. - Predict what will happen when an algorithm is complete. - Begin to change and improve algorithms.	- Know how to find information and applications on a range of devices. - Begin to learn how to use a touchpad effectively. - Begin touchtyping and increase in fluency. - Know how to manipulate font through applications like Word and Docs. - Begin to know how to navigate a website. - Use search engines to find information.	- Know some of the differences between computers now and computers 30 years ago. - Begin to know the differences between a computer and more basic pieces of technology.

Greater Depth

- Begin to learn how to make a presentation.
- Manipulate the size and where to put images.

Internet Safety

- Know you should only read messages from people you know.
- Know that some applications and games have an age-rating and are not meant for children.
- Know that money can be spent on the internet and applications and to be careful not to do this.
- Know that they should not share personal information online.
- Know what a password is and why we need them when working online/with technology.
- Know what to do if somebody sends them a message/they find images that are inappropriate.

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Year Three

Algorithms and Programming

- Know how to improve algorithms and begin to know that this is called debugging.
- Begin to experiment with what will happen when instructions are changed.
- Begin to understand that algorithms can be used outside of computing.

Data and Use of Technology

- Create a full presentation and present this to their class.
- Manipulate text, knowing how to highlight areas that need changing.
- Manipulate images by rotating and changing filters for presentations.
- Know how to get images from online.
- Know how to save work on the system.
- Know their email address and begin to send very basic emails.

Understanding of technology

- Know why we use different software for different purposes (e.g. Notes and Slides).
- Know that the school is on a network and we are able to access each other's work.
- Know that information found on the internet is not always true.

Greater Depth

- Begin to use block code to make simple algorithms.
- Input data into a database and create tables/graphs from the data given.
- Use photo editing software to manipulate images.
- Know how to screenshot their work.

Internet Safety

- Now that rules are needed to keep them safe online and begin to introduce those rules.
- Know to use caution when searching for images online and what to do if they find an inappropriate image.
- Understand that passwords for their accounts are private.
- Recognise that cyberbullying is unacceptable and know what to do if they encounter it.
- Know that information found on the internet is not always true.
- Understand why they should not share personal information online.
- Understand what is meant by 'Digital Footprint'

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Year Four

Algorithms and Programming

- Know what debugging is and begin to use it.
- Begin using block code to create algorithms and basic animations.
- Identify that computing skills (such as algorithms and debugging) can be applied outside of computing.
- Give accurate predictions on the outcome of programs.

Data and Use of Technology

- Use iMovie to record and edit their own video.
- Know how to screenshot their work.
- Know that there is an automatic spellcheck on software and begin to know how to use it.
- Know that the search bar is also an address bar to type website addresses straight in.
- Begin to use tabbed browsing online.
- Know how to add images, videos and sound to software like iMovie and slides.

Understanding of technology

- Know what software to choose when asked to do specific work (e.g. presentation =Slides or ppt).
- Understand the difference between plagiarising work they have found and putting it into their own words.

Greater Depth

- Use photo editing software to manipulate images.
- Use animations in presentations.
- Use voiceover when editing iMovie.
- Begin to understand what it means to 'tinker' with programs.

Internet Safety

- Know exactly what cyberbullying is and how to identify it.
- Know the pitfalls and issues with using instant messaging services such as Whatsapp.
- Know how to respond if asked for personal information online.
- Understand that the outcome of searches and the sites we can use may be different at home than at school.
- Begin to understand that music, images and videos have 'copyright' and what this means.
- Explain what they could do if they find a piece of suspicious information that they are unsure is true or not online.

End Points for Computing

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Year Five

Algorithms and Programming	Data and Use of Technology	Understanding of technology
- Write programs that contain repetition. - Begin to tinker with other people's algorithms and predict the effects. - Begin to decompose algorithms. - Create an animation or game using Scratch that contains several sprites and different elements. - Know the following terms: Sequence, Algorithm, Debugging, Decomposition, Tinkering.	- Add different texts, images, sounds and animations to presentations, videos or animations. - Consider an audience when editing. - Use Excel/Sheets to create a base of data. - Use artistic software to create images and manipulate them appropriately e.g. pixilart.	- Understand that all computers contain input, output, storage and processing. - Understand that the internet is a physical network that goes around the world. - Have a basic understanding of the school's network and where the important elements are within school.

Greater Depth

- Save a document as a different file e.g. turn pdf into jpeg.
- Begin to use symbols such as =, < and > when using database software or creating algorithms
- Know how to search online using keyword searches.
- Work through Parson problems independently.

Internet Safety

- Discuss the positives and negatives of technology and the internet in their own lives.
- Understand what clickbait is and why people use it.
- Begin to understand what phishing is and know how to report it if they encounter it.
- Understand that some adults online may use malicious ways to find out information about them.
- Know that anything put online is very hard to remove.
- Know what to do if they discover something malicious or inappropriate online.
- Know how and why we are unable to access some sites at school.
- Begin to competently use the internet as a research tool knowing that not everything can be trusted and how to evaluating this.

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Year Six

Algorithms and Programming

- Detect errors accurately in algorithms and correct them.
- Tinker and discuss 'what if' questions when looking at algorithms.
- Begin to understand what 'abstraction' is and how to apply it to code.
- Use input from sensors to trigger events (e.g. when a Scratch Sprite is touched it disappears and reappears somewhere else).
- Create a game/animation using all the skills learnt in their education journey so far.

Data and Use of Technology

- Use music software to create a piece of music.
- Add special effects to alter graphics and appearance.
- Contribute to structured discussions online.
- Make a poster / presentation using all the skills learnt through other year group's end point.
- To be able to edit mp4 files (splice/cut/lengthen).
- Adapt a film within video editing software.

Understanding of technology

- Understand the four elements of a computer (input, output etc.) and begin to understand what binary is.
- Know how to capture images, sounds and video on most devices.
- To understand how to use film editing software.
- To know how to import an mp4/mp3 file.
- To know how to create an mp3 voice over.

Greater Depth

- Conduct a video chat with more than one person at a time.
- Compare information from two bias resources (in separate tabs) online.
- Use email effectively and send each other and their teacher messages.
- Begin to know how to create and develop their own blog.
- To know how to use loops in algorithms.

Internet Safety

- Use appropriate strategies for finding information online and evaluating, validating and verifying it.
- Understand the benefits of developing a 'nickname' online.
- Understand that they should not publish other people's pictures online or tag them without permission.
- Understand that online environments have security settings which can be altered to protect the user.
- Know some of the harmful effects social media can have on mental health.
- Understand how to behave with one another when communicating via social media or playing games online.

Appendix 1.1 – Succinct End Points Poster

Use touch screen.

Use a digital camera. YR/1

Understand that technology can give us information.

* Learn that we can create a list of instructions called algorithms and change and improve them.

Be aware of how technology is used in the wider world.

Use of touchpad. Y2/3

Type fluently.

Use a web browser, safely.

Access software independently (on a laptop and ipad).

Manipulate font and images.

* Learn that we can make a list of instructions called an algorithm that the computer can carry out for us.

* Understand how to improve a set of instructions (debug).

* Use and debug algorithms without technology.

* Use 'Draw' element or basic coding element with basic software (e.g. Spheros).

Use software to edit image, video and sound (e.g. iMovie).

* Start to debug algorithms using Scratch and other programming software. Y3/4

Use internet to find 'correct' information and present it using Powerpoint or Nearpod.

* Understand what makes a computer a computer by looking at the four elements - Input, Process, Storage and Output.

* Begin to tinker and decompose algorithms on Scratch.

* Look at the schools' network and understand what the internet is. Y5/6

Use editing software to put sounds and videos together to create a larger piece of work.

Ensure children are given a wide range of devices to input codes and see the effects (Spheros, Scratch, Bloxels, Raspberry Pi).

KEY LEARNING INCLUDES ASTERISK

Don't forget – Computing doesn't mean technology must be involved!

This is supported with regular and in depth sessions on being safe online in ALL year groups.

Sequence of Learning across year groups.

Deeper Learning

Begin to type using keyboard.
Find software independently.
Use simple algorithms to manipulate software

Begin to use block-coding
Begin to edit video, images and sounds using software.
Use internet search engines to find information

Tinker with algorithms and work done by others.
Understand what a computer is
Understand what a network is

Create games and cartoons that have several sprites and different algorithms
Begin to look at other ways of coding e.g. worded code
Look beyond Scratch at Python and Unity at other ways to code

Appendix 1.2 – Sequence of Computing Vocabulary

Computing Vocab

Change	- KS1 + Year R -	Make easier
Swap/Replace	- LKS2 -	Break down
Tinkering	- UKS2 -	Decomposition

Instructions	- KS1 + Year R -	What's wrong with this?
Algorithm	- LKS2 -	Find problems
Algorithmic thinking	- UKS2 -	Debugging

Take out	- KS1 + Year R -	Pattern
Improve	- LKS2 -	Repeated pattern
Abstraction	- UKS2 -	Pattern Recognition

All computers contain...