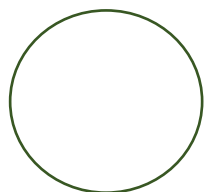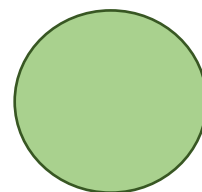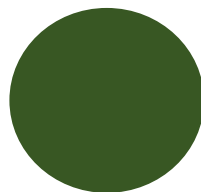# Trinity and St.Michael's

Computing Policy

2021-2022

I will instruct you and teach you in the way you should go; I will counsel you with my loving eye on you.
Psalm 32 Verse 8

Do everything in

L♥ve

1 Corinthians 16:13-14

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APPENDICES 'Digital Literacy' End Points

1 - Intent

Through our computing curriculum at Trinity we aim to give our pupils the life-skills that will enable them to embrace and utilise new technology in a socially responsible and safe way in order to flourish. We want our pupils to be able to operate in the 21st century workplace and we want them to know the career opportunities that will be open to them if they study computing. We want children to become autonomous, independent users of computing technologies, gaining confidence and enjoyment from their activities. We want the use of technology to support learning across the entire curriculum and to ensure that our curriculum is accessible to every child. Not only do we want them to be digitally literate and competent end-users of technology but through our computer science lessons we want them to develop creativity, resilience and problem-solving and critical thinking skills. We want our pupils to have a breadth of experience to develop their understanding of themselves as individuals within their community but also as members of a wider global community and as responsible digital citizens.

2 - Implementation

At Trinity and St.Michael's we help **pupils and staff** develop the confidence and expertise to use technology creatively, logically and safely by:

- Giving pupils experiences of dealing with a variety of devices to input and output data.

- Helping them gain an understanding of the four areas of computational thinking which we define as Algorithmic thinking, Abstraction, Decomposition and Pattern Recognition.

- Using computing effectively as a cross-curricular subject, not only developing its natural links with Science, Maths and DT, but also looking at each individual curriculum to create connections.

- Using technology creatively, developing ways for children to express themselves and their ideas.

- Understanding how local and international technological networks work and learn how to use these safely.

Computing at Trinity and St Michael's, children will gain an understanding of how technology can used as a tool to support our lives and our learning and how we can express ourselves through its use. Children will learn to appreciate where technology is in our world and how it can be used to better our lives and our futures.

Through the implementation of computing at Trinity and St Michael's, children will:

- better understand what a computer is and how it differs from other pieces of technology.

- understand the basic principles of computational thinking.

- Create and use algorithms with or without the use of technology.

- Understand the processes of debugging and tinkering and their importance when working with algorithms.

- Children will learn to use technology to research information effectively, understanding the issues we may find when finding information online.

- Create and be creative with technology through presentation, video and audio editing.

- Respect the issues technology, and in particular social media, can create in society and discuss these with adults and children in school.

- Begin to create basic cartoons and video games through the use of software such as Scratch.

- Use a variety of technological devices including ipads, chromebooks and other algorithmic devices such as spheros.

For further information on what pupils will experience and learn in RE at Trinity and St Michael's please see appendix 1

4 – Sticky Knowledge

4.1 - Key Stage One

By the end of Key Stage One, all children will know these pieces of sticky knowledge:

Find software on ipads and laptops independently

Begin to type fluently

Develop an idea of what can be done online.

Understand what an algorithm is

Begin to manipulate font and images

Input data using basic technology e.g. cameras, touch screen and touchpad

Be able to identify the difference between a computer and an electrical appliance e.g. torch

Learn how to use technology safely (e.g. not give personal info out).

4 – Sticky Knowledge

4.2 - Key Stage Two

By the end of Key Stage Two, all children will know these pieces of sticky knowledge:
:

Create algorithms with and without technology

Begin to debug algorithms and information

Understand what a network is and what our school network looks like

Decompose and tinker algorithms

Understand what the internet is and the positives and negatives it has

Edit images and sound using computing software

Learn how to use technology safely (e.g. not give personal info out).

Know a computer has an input, process, storage and output

5 – Teaching and Learning

- Teachers will choose to teach computing as a weekly session or in larger blocks. Either way, computing lessons should amount to at least 45 minutes a week (around 5-7 hours each half term).

- Teachers will ensure technological devices are used during subjects that are not computing taking advantage of the school's many subscriptions to make learning engaging and fun as well as familiarising children with using these devices.

- Teachers will teach discrete computing skills (e.g. algorithms, debugging etc.) regularly applying this language to other areas of the curriculum and everyday parlance.

- Teachers should feel comfortable to teach computing without using technological devices as long as computing end points are being hit.

- Teachers are encouraged to save any work completed to the Shared Drive (or cloud). Where this is not possible, teachers are encouraged to take photos of the children's work and post this on Twitter/Blippit.

- Teachers will regularly teach children how to stay safe online and in the use of social media. Teachers may decide when these lessons occur as it may be as a response to an issue in class. It is advised that this is discussed, in some form, at least once a term.

6 – Computing Curriculum

- Through the use of our 'Digital Literacy' End Points (see appendix) teachers will ensure they hit the computing curriculum as this form was created with the computing curriculum at its foundation. Teachers are asked to approach the computing curriculum in an engaging and interesting way that suits their class and best impact the pupils in front of them. Due to this, no scheme is prescribed. However, should a teacher feel more comfortable following a scheme, this is not an issue as long as end points are being hit. Websites and online resources and lesson ideas are regularly shared with staff and these should be used to create practical and interesting sequence of computing lessons.

7 – Foundation Stage

- Learning how to use technology begins in Reception. Children will regularly use ipads, finding applications and some may even learn to take pictures of themselves and the world around them. At TSM we ensure the

8 – Computing Curriculum Links

Teachers plan discreet lessons but also maximise opportunities for a cross-curricular and creative approach to enhance learning through links to other subjects including art and music.

- **English** – Use of computing software is used regularly with English to improve both writing and reading. Apps such as Reading Plus and Reading Eggspress allow children to access reading as well as practise their touch typing skills. Nearpod also allows touch typing practice as well as giving teachers a creative way to teach English. Children are also able to use iMovie for drama and as a good end point for some of their English work (e.g. news reports).
- **Art and DT**– Every effort is made to ensure children are able to be creative when using technology. This is done through use of pixel art (sites such as pixilart.com or Minecraft) or more traditional digital art through Nearpod. As well as this, children learn to take pictures through apps such as Nearpod and are explicitly taught photography at different points in their educational journey (Y1 and Y6 predominantly). Children will also be able to use 3D graphic engines (such as Minecraft) to design and build models. These can often be linked with **History**.
- **Maths** – The link between Maths and Computing should be made explicit. The skills of algorithmic thinking, debugging, pattern recognition and abstraction can be used throughout both subjects and this language should be discussed.
- **Spiritual, moral, social and cultural development /PSRHE** – Children's understanding of how the world works can be enhanced through computers and computing. They will regularly use technology to research and inform debate on moral and social issues. As well as this, discussions on the use of technology, looking at the positives and negatives, happen regularly through PSRHE sessions and language such as clickbait is discussed and learnt.

The coordination and planning of the Computing curriculum are the responsibility of the subject leader, who also supports colleagues in their teaching and monitors and keeps informed about current developments in the Computing curriculum.

The Computing subject leader will monitor the effectiveness of its teaching by:

- Reviewing Computing curriculum to ensure progression and coverage annually.
- Regularly monitoring a sample of exercise books & class reflection books (once a term)
- Delivering training and support when appropriate.
- Identifying and ordering resources.
- Gathering physical and digital evidence throughout the year of Computing being taught in school.

This policy will be **reviewed every three years**.

Computing Subject Lead: Gwynan Hughes

Headteacher: Claire Procter

Date: January 2022

Appendix 1 – End Points

YEAR ONE

Algorithms and Programming	Data and Use of Technology	Understanding of technology
- Create a simply 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. - Begin to type using a keyboard/touch screen keyboard.	- Be aware of the internet, what is 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

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 Notes. - 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.
- Put sounds and transitions into presentations.
- Write a simple program, using block code, and implement it.

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.

End Points for Computing

YEAR THREE

Algorithms and Programming	Data and Use of Technology	Understanding of technology
- 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.	- 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.	- 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.
- Begin to identify when emails should not be opened.
- Understand why they should not share personal information online.

YEAR FOUR

Algorithms and Programming	Data and Use of Technology	Understanding of technology
- 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.	- 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.	- Know what software to choose when asked to do specific work (e.g. presentation =Slides or ppt). - Know that the school's network includes printers, other computers and a server. - Know the benefits of email and instant messaging. - 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 Excel/Google Sheet to create graphs.
- 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

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.	- Use Garageband to create a piece of music. - Add different texts, images, sounds and animations to presentations or videos. - Consider an audience when editing using Slides/ppt/iMovie. - Use Excel/Sheets to create graphs and tables. - 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 thing - Know how to capture sounds, images and videos on most devices.

Greater Depth

- Use photo editing software to manipulate images.
- Save a document as a different file e.g. turn pdf into jpeg.
- Create a 'mini-website' that includes a homepage and hyper links to other areas of the site.
- Begin to use symbols such as =, < and > when using database software e.g. Excel/Sheets.
- Know how to search online using keyword searches.

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.

YEAR SIX

Algorithms and Programming	Data and Use of Technology	Understanding of technology
- 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 Sphero hits something, it changes colour/makes sound). - Create a game/animation using all the skills learnt in their education journey so far.	- Use Garageband to create a piece of music. - Add special effects to alter graphics and appearance. - Contribute to structure discussions online. - Make a poster / presentation using all the skills learnt through other year group's end point. - Use Excel/Sheets to collate and work with more complicated sets of data (e.g create a pie chart). - Adapt a film within video editing software.	- Understand the four elements of a computer (input, output etc.) and begin to understand what binary is. - Understand exactly what the internet is. - Have a basic understanding of the school's network and where the important elements are within school.

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.

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 2 – Succinct End Points and Key Vocab.

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
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 Spheros.
Use iMovie to demonstrate editing.
Start to debug algorithms using Scratch and Y3/4 other programming software.
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 Y5/6 **understand what the internet is.**
Use iMovie/Garageband editing software.

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

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

'Digital Literacy' End Points

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**

Computing Vocab

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

All computers contain...

PROCESSING

INPUT

OUTPUT

STORAGE