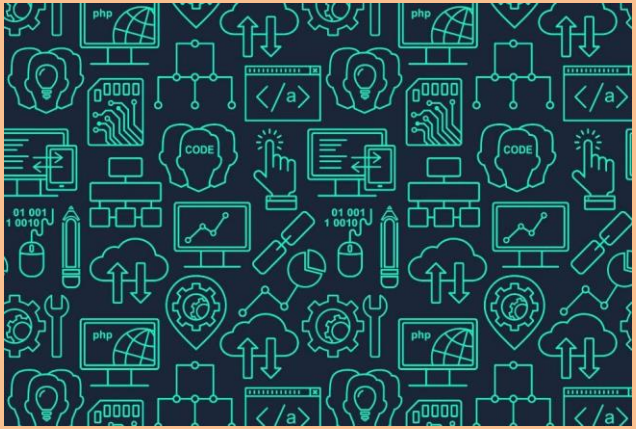
Curriculum Skills and Progression Map
Computing: 2021 to 2022



Horsford C of E VA Primary School

Nebula
where stars are born

The Computing Curriculum and Christian Distinctiveness

at Horsford CofE VA Primary School

At Horsford C of E Primary School, our values **compassion**, **courage** and **responsibility** are promoted and heavily featured in our Computing curriculum. Pupils are living within an increasingly technological world and aim to develop confidence and knowledge in this area and to share their Christian values through different elements of technology. In school we drive to take responsibility for our actions and learning attitudes using technology. We reflect on the story 'The wise and foolish man' and take responsibility by not always taking the easy option and try something that might challenge us but will broadly benefit ourselves and people around us. Online safety continues to be at the forefront of learning and we have a huge focus on online behaviour and how to have a positive online presence. We take courage from Esther who spoke out when she saw her people being treated unfairly (Esther 2-9) to help us report any online incidents or concerns children may have.

'Spirituality is the bitter-sweet yearning for beauty, truth, love and wonder beyond ourselves. It is a longing we pursue together and a treasure we glimpse in ourselves and one another and seek beyond us into eternity. It is life in all its fullness.'

COMPUTING AGE RELATED STATUTORY COVERAGE		
EYFS	**KEY STAGE ONE LEARNING**	**KEY STAGE TWO LEARNING**
No EYFS guidance and ELG for this area	• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs • Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Recognise common uses of information technology beyond school • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. **Both Key Stages:** • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration • Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, systems and content to accomplish given goals

Computational Thinking Skills							
Tinkering	**Making**	**Collaboration**	**Persevering**	**Logic**	**Pattern**	**Abstraction**	**Algorithms and Decomposition**

Computing EYFS Curriculum		
No EYFS guidance and ELG for this area		
Vocabulary		
• Computer • Software • Mouse	• Program • Technology	• Icon • Ipad • Touch screen
Inquiry		
Computing is covered throughout the year through weekly themes taken from the interests of the children. A weekly hook sheet is published, and specific projects are identified on them. Weekly enhanced provision is planned to ensure the children have the opportunity to explore computing skills independently throughout the week. *'Computational thinking'* skills will also be encouraged as an element of computing in reception and support them in giving the children problem solving skills that they use in everyday life.		

Early Years – Computing		
Network and Internet	**Using ICT**	**Making Things Happen**
E Safety • Can they act if they find something they are unsure of (including identifying people who can help)?	• Can they make marks using technology? • Can they tinker with technology and learn from this?	• Can they explore and interact using a range of equipment? • Can they preserve with a task until it is complete? • Can they sequence things in the correct order?
Problem Solving and Logical Thinking	**Creative Content**	**Digital Literacy**
• Can they break down a problem into simpler steps? • Can they begin to plan and test instructions? • Can they work out different ways to do something? • Can they show that they are applying logic to a simple task?	• Can they create original content? • Can they make something, check it works and fix it if they need to?	• Can they collect information using ICT? (e.g. take photographs, voice recordings, text)
Early Years - Greater Depth		
• Can they follow and evaluate a set of instructions (simple algorithm)?	Can they save or capture and retrieve their original content?	

Computing Skills Map KS1								
Computational Thinking Skills								
Tinkering	**Creating**	**Collaboration**	**Perseverin g**	**Debuggi ng**	**Logic**	**Pattern**	**Abstraction**	**Algorithms and Decomposition**

Cycle 1 Can they recognise ICT around them? Can they explore information from various ICT sources? (All Year)		**Cycle 2** Can they recognise ICT around them? Can they explore information from various ICT sources? (All Year)	
Autumn 1	**Autumn 2**	**Autumn 1**	**Autumn 2**
Computer Skills Can they use names for ICT components? Can they move objects around on a screen? Can they develop awareness and use of keyboard layout and use navigation skills appropriately? **Word Processing** Can they create original content using digital technology and save it? Can they type a simple phrase using a keyboard? Can they explore different features of a word processing application?	**Online Safety** Do they know that personal information should not be shared online? Do they understand that we need permission to use someone else's things? Do they understand if someone owns something it is theirs? Do they understand that you need permission to use digital things and there might be rules about what you can do with it if you have permission?	**Computer Skills** Can they use names for ICT components? Can they move objects around on a screen? Can they develop awareness and use of keyboard layout and use navigation skills appropriately? **PowerPoint** Can they resize a picture? Can they make a simple slideshow? Can they use a webpage as a resource?	**Online Safety** Can they act if they find something, they are unsure of? Do they know that personal information should not be shared online? Do they recognise the different forms of digital communication? Can they recognise advertising on websites and learn to ignore it and know that everything on the internet isn't true? Can they communicate safely online?
Spring 1	**Spring 2**	**Spring 1**	**Spring 2**
Programming- Algorithms Can they follow, create and record a simple series of algorithms (instructions)? Can they begin to plan and test their instructions? Can they use logical reasoning to solve a problem? Can they repeat a series of actions for a purpose?	**Programming- Designing and debugging** Can the pupils confidently tinker independently? Can they use logical reasoning to solve a problem? Can they begin to write and debug a code?	**Programming- Algorithms** Can they understand how to make something move? Can they give a single instruction to make something happen? Can they program using sequences of instructions to implement an algorithm?	**Programming- Designing and debugging** Can they predict the outcomes of a set of instructions? Can they plan, create and debug a simple programme? Can they create an algorithm for their partner to debug?

Can they predict the outcomes of a set of instructions?		Can they explain what has happened when using ICT for control?	
Summer 1	**Summer 2**	**Summer 1**	**Summer 2**
Computer Art Can they use a simple art program? Can they create original content using digital technology and save it? Can they tinker, create and save a piece of art using technology?	**Using and applying skills** Can they create original content using digital technology and save it? Can they recognise different ways of using ICT and decide which to use? Can they understand that technology is used in a range of ways?	**Computer Art** Can they use a simple art program? Can they create original content using digital technology and save it? Can they use shape tools to draw? Can they understand that technology is used in a range of ways? Can they tinker, create and save a piece of art using technology?	**Internet and PowerPoint** Can they find information on the internet? Can they understand the importance of ICT? Can they experiment with various features to create content (in a small group or alone)? Can they create, edit and format text?

Year 1/2 - Greater Depth

- Can they use and apply logical thinking to solve a problem involving programming? (e.g. programming a toy)
- Can they use digital technology to organise and edit content? (e.g. text in an app, editing images)
- Can they appreciate that some algorithms are more efficient than others and use methods of efficiency to test these?

Deeper Learning

Blooms Taxonomy Questions (See Appendix C)

- Using the pyramid choose one of the words to form a deeper learning question for the children. These will vary all depending on the child, lesson outcomes and the skills taught within the lesson but as a starting point use the question words and question stems to support with this.
- Statements- Josie thinks all technology needs the internet to work. Do you agree/disagree? Why? Give examples.

Other Ideas

Here are a few ideas to support with creating questions or next steps to develop the children's deeper thinking of computing.

- Odd one out
- Sometimes, always, never
- True or False
- Convince me (Convince me that I need to be safe on the internet)
- Prove it- Prove that algorithms need to be put in the correct order.
- What's the same/difference?

Further Information

See Appendix A for long term plan for each combined year groups.
See Appendix B for Assembly plan overview
See Appendix C for definitions for Computational Thinking Skills

Computing Skills Map KS2 – Lower School								
Computational Thinking Skills								
Tinkering	**Making**	**Collaboration**	**Persevering**	**Debugging**	**Logic**	**Pattern**	**Abstraction**	**Algorithms and Decomposition**

Year 3/4 – Computing			
Cycle 1 Can they recognise the importance of ICT in the real world? Can they use ICT across subjects? (All Year)		**Cycle 2** Can they recognise the importance of ICT in the real world? Can they use ICT across subjects? (All Year)	
Autumn 1	**Autumn 2**	**Autumn 1**	**Autumn 2**
Computer Skills Can they use @ in emails? Can they navigate a website by clicking on links? Are they confident typing and confident to use a computer? **Word** Can they use ICT to organise and present their work? Can they create and position text, alter font and align text? Can they format text towards a specific purpose? Can they use bullet points and numbering? Can they order and organise text using a word processing program? Can they use the automatic spell checker to edit spellings?	**Programming- Sequence and abstraction** Can they understand the importance of clear and precise instructions? Can they use algorithms to control movement? Can they make accurate predictions about the outcome of a program they have written? Can they write a program with a sequence of instructions?	**Computer Skills** Can they use @ in emails? Can they navigate a website by clicking on links? Are they confident typing and confident to use a computer? **PowerPoint** Do they know how to manipulate text (e.g. underline text, centre text, change font and size)? Can they save files (e.g. word doc, pictures) to an appropriate folder? Can they insert media into a presentation? Can they create a presentation that is aimed at a specific audience?	**Computer Animation** Do they understand how computers have made a difference? Do they understand what animation means? Can they create a short computer animation? Can they use a variety of software to design and create content that accomplishes given goals?

Spring 1	Spring 2	Spring 1	Spring 2
Online Safety and Being Cyber Smart Can they recognise that cyber bullying is unacceptable and will be sanctioned in line with the school's policy? Do they understand some of the law around what it is illegal to do with computers? Can they give examples of activities which break the law using computers? Can they identify victims of cybercrime?	**Programming- designing and debugging** Can they create and debug simple programs? When a program goes wrong, can they debug it? Can they decompose a game into its parts? Can they design, program, debug, present and evaluate a game?	**Online Safety** Can they understand the importance of email safety? Can they recognise immediately when online safety is compromised and know how to get support? Can they use a search program and understand how to rank information? Do they know what to do if they find an unsuitable image? Can they understand the importance of email safety?	**Programming- Algorithms Designing and Debugging** Can they make accurate predictions about the outcome of a program they have written? Can they understand what is important and what is unimportant? Are they aware that thinking about what is ignored or included in computer simulations and games is an important aspect of design?
Summer 1	**Summer 2**	**Summer 1**	**Summer 2**
Internet Research and Communication Do they understand the need for caution when using an internet search for images? Can they recognise an email address and different ways to send a message? Can they find relevant information by browsing? Can they use a search engine to find a specific website?	**Using and applying** Can they present information using a range of software? **PowerPoint** Can they combine text and images and show awareness of audience? Can they insert media into a presentation? Do they know how to manipulate text, underline text, centre text, change font and size and save text to a folder?	**Excel** Can they recognise terms – e.g. cell, row, column? Can they fill in a data collection sheet? Can they understand what a spread sheet is and the benefits of using one?	**Using and applying** Can they combine text and images and show awareness of audience? Can they present information using a range of software? Can they record using video, and amend what they have recorded?

Year 3/4 - Greater Depth
Can they recognise the impact of keyword choice on search engine results? (e.g. results ranked according to relevance or reliability of content and credibility of sources) Can they evaluate content (created/researched) against a given goal? Can they can give reasons for errors in programs and explain how they have corrected these through decomposition and debugging?
Deeper Learning
Blooms Taxonomy Questions (See Appendix C) • Using the pyramid choose one of the words to form a deeper learning question for the children. These will vary all depending on the child, lesson outcomes and the skills taught within the lesson but as a starting point use the question words and question stems to support with this. **<u>Other Ideas</u>** Here are a few ideas to support with creating questions or next steps to develop the children's deeper thinking of computing. • Odd one out • Sometimes, always, never • True or False • Convince me (Convince me that I need to be safe on the internet) • Prove it- Prove that algorithms need to be put in the correct order. • What's the same/difference? • Statements- Josie thinks all technology needs the internet to work. Do you agree/disagree? Why? Give examples.
Further Information
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Computing Skills Map KS2 – Upper School								
Computational Thinking Skills								
Tinkering	**Creating**	**Collaboration**	**Persevering**	**Debugging**	**Logic**	**Pattern**	**Abstraction**	**Algorithms and Decomposition**
Year 5/6 – Computing								

Cycle 1 Can they recognise the importance of ICT in the real world? Can they use ICT across subjects? (All Year)		**Cycle 2** Can they recognise the importance of ICT in the real world? Can they use ICT across subjects? (All Year)	
Autumn 1	**Autumn 2**	**Autumn 1**	**Autumn 2**
Microsoft Recap Can they add, amend and combine different forms of information in different ways? **Word** Can they confidently choose the correct page set up option when creating a document? **PowerPoint** Can they use a range of presentation applications? Can they add special effects to alter the appearance of a graphic? **Excel** Can they understand the purpose of spreadsheets? *Year 6 may need some deeper thinking challenges to extend their learning as these skills are repeated in Cycle 1 and 2.*	**Online Safety** Can they independently, and with regard for e-safety, select and use appropriate communication tools to solve problems by collaborating and communicating with others within and beyond school? Do they understand they should not publish other people's pictures or tag them on the internet without permission? Do they know that content put online is extremely difficult to remove? Do they know what consent means when we agree to terms and conditions online? Do they know the rights we give to social media organisations to use our personal information	**Microsoft Recap** Can they add, amend and combine different forms of information in different ways? **Word** Can they confidently choose the correct page set up option when creating a document? **PowerPoint** Can they use a range of presentation applications? Can they add special effects to alter the appearance of a graphic? **Excel** Can they understand the purpose of spreadsheets?	**Online Safety** Do they know that content put online is extremely difficult to remove? Can they decide which sections are appropriate to copy and paste from at least two web pages? Do they understand that some material on the internet is copyrighted and may not be copied or downloaded? Do they recognise the potential risks of using internet communication tools and understand how to minimise those risks (including scams and phishing)? Do they understand that some malicious adults may use various techniques to make contact and elicit personal information? Can they define phishing and why it is used by cyber criminals? Can they identify common features and themes of phishing?

Spring 1	Spring 2	Spring 1	Spring 2
Excel Can they understand the purpose of spreadsheets? Can they enter data and formulae into a spreadsheet? Can write a simple formula in a spreadsheet? Can they change data in a spreadsheet to answer 'what if...?' questions and check predictions	**Programming- Algorithms and debugging** Can they adapt and modify programs and add refinements? Can they explain how an algorithm works? Can they detect errors in a program and correct them? Can they explain 'what if' scenarios? Can they explore 'what if' questions by planning different scenarios for controlled devices? Can they write a program using selection?	**Kodu** Can they adapt and modify programs and add refinements? Can they make predictions about what might happen in a game program? Can design, write and debug their own programme? Can in detail explain what happens in their programme? Can I design and code in Kudo?	**Programming- Algorithms and debugging** Can they adapt and modify programs and add refinements? Can they explain how an algorithm works? Can they detect errors in a program and correct them? Can they understand the importance of successful sequence, code and algorithms? Can they write a program that uses the repeat command? Can they explain what the repeats in the program do?
Summer 1	**Summer 2**	**Summer 1**	**Summer 2**
Understanding the internet Can they conduct a safe internet search and refine it for both speed and accuracy? Know how to distinguish between good and bad information found on the internet. Can they rank information found on the internet in order of importance and relevance? Can they understand that poor input equals unreliable results? Can they explain how the internet provides access to the WWW?	**Programming- Developing games** Can they make predictions about what might happen in a game program? Can they plan a solution to a problem using decomposition?	**3D Modelling** Can they create and use a 3D modelling application? Can they plan, create and evaluate their content? Can they create a 3D shape? Can they add detail? Can they create a complex 3D design?	**Using and applying** Can they work on simple film editing? Can they create a sophisticated multimedia presentation? Can they add, amend and combine different forms of information in different ways? Can they add special effects to alter the appearance of a graphic?

Year 5/6 - Greater Depth
Can they recognise the impact of keyword choice on search engine results? (e.g. results ranked according to relevance or reliability of content and credibility of sources) Can they evaluate content (created/researched) against a given goal? Can they can give reasons for errors in programs and explain how they have corrected these through decomposition and debugging? Can they compare the information provided on two tabbed websites looking for bias and perspective? (e.g. evaluating the source of content, reliability and credibility of content, sharing information on secure and encrypted websites) Can they apply a range of logical and computational thinking to a program and simulate this using an appropriate application?
Deeper Learning
Blooms Taxonomy Questions (See Appendix C) • Using the pyramid choose one of the words to form a deeper learning question for the children. These will vary all depending on the child, lesson outcomes and the skills taught within the lesson but as a starting point use the question words and question stems to support with this. **Other Ideas** Here are a few ideas to support with creating questions or next steps to develop the children's deeper thinking of computing. • Odd one out • Sometimes, always, never • True or False • Convince me (Convince me that I need to be safe on the internet) • Prove it- Prove that algorithms need to be put in the correct order. • What's the same/difference? • Statements- Josie thinks all technology needs the internet to work. Do you agree/disagree? Why? Give examples.
Further Information
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Computing Skills Map Whole School E – Safety Assemblies	
Knowledge and Understanding	**Skills**
● Do they understand the need for rules to keep them safe when exchanging learning and ideas online? ● Can they recognise that information on the internet may not be accurate or reliable and may be used for bias, manipulation or persuasion? ● Do they understand that the internet contains fact, fiction and opinion and begin to distinguish between them? ● Do they understand the need for caution when using an internet search for images and what to do if they find an unsuitable image? ● Do they understand that copyright exists on most digital images, video and recorded music? ● Do they understand the need to keep personal information and passwords private? ● Do they understand that if they make personal information available online it may be seen and used by others? ● Do they know how to respond if asked for personal information or feel unsafe about content of a message? ● Can they recognise that cyber bullying is unacceptable and will be sanctioned in line with the school's policy? ● Do they know how to report an incident of cyber bullying?	● Do they follow the school's safer internet rules? ● Can they begin to identify when emails should not be opened and when an attachment may not be safe?

COMPUTING VOCABULARY MAP		
EYFS	**KEY STAGE ONE**	**KEY STAGE TWO**
• Computer • Software • Mouse • Ipad • Touch screen • Program • Technology • On/off • Icon	Folder, presentation, text, edit, save, print Search, internet, results, safety, blog, camera, online, respectfully, comment, response Appropriate content, digital footprint, search, internet, online, website, review, e-safety, retrieve Save, keyboard, mouse, text, edit, format, font, type Algorithm, program, command, debug, rotate, repeat, backdrop, sprite, input, output Communicate, e-safety, personal information, digital, Start up, shut down, save, application, text, program, mouse, keyboard	Algorithm, pen up, move, variable, clear screen, pen down, degrees, instructions, sound, commands, forward, calculation, Internet, World Wide Web (WWW), search, search engine, results, Google, Bing, Yahoo, browser, key words, multiple, trustworthy, spam, communicate, message, social media, Facebook, Twitter, Snapchat, Flickr, Instagram, email, social media, email, attachment, tweet, network Hyperlink, insert, toolbar, text, format, edit, font type, font colour, font size, align, paste, copy, bullet, text box, wrap, save, spell check, review, highlight, cursor, Debug, input, interface, output, program, prototype, repetition, variable, scratch, algorithms, Data, formula, spreadsheet, calculate, 3D, 2D, manipulate, Program, design, original, effects, sprite, levels, Online, safety, cyber-bullying, message, search engine, search results, plagiarism, citation, social media, profile, account, private, public, digital citizen, responsibility, community, personal information, share, permission <u>Barefoot Language</u> Computational thinking Logic, Algorithms, Decomposition, Patterns, Abstraction, Evaluation, Tinkering, Creating, Debugging, Persevering, Collaborating, Computer Science, Programming, Repetition, Sequence, Selection, Variables, Computer Networks, Internet Services, Computer Systems, Inputs, Outputs, Control, Data, Simulation, Search Technologies, HTML

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Computing Long Term Plan Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Cycle 1						
Years 1 & 2	*Computer skills Word Processing Skills*	*Online Safety*	Programming- Algorithms	Programming- designing and debugging	Computer Art	Using and applying skills
Years 3 & 4	*Computer skills Microsoft Word*	Programming- Sequence and Abstraction	Online Safety and Being Cyber Smart	Programming- designing and debugging	Internet Research and Communication	Using and Applying Skills PowerPoint
Years 5 & 6	*Microsoft Application Recap*	Online safety	Excel	Programming- Algorithms and debugging	Understanding the Internet	Programming- Developing Games
Cycle 2						
Years 1 & 2	*Computer skills Microsoft PowerPoint*	*Online Safety*	Programming- Algorithms	Programming- designing and debugging	Computer Art	Internet and PowerPoint
Years 3 & 4	*Computer skills Microsoft PowerPoint*	Computer Animation	Online Safety	Programming- algorithms designing and debugging	Excel	Using and Applying Skills
Years 5 & 6	*Microsoft Application Recap*	Online Safety	Kodu	Programming- Algorithms and debugging	*3D Modelling*	*Using & Applying Skills*