

St Anne's R.C. Nursery and Primary School

Computing Policy
2022-23

“To help every person here to achieve his or her best
in work and in play.

To celebrate whatever is good and to follow in the
footsteps of Jesus by supporting and forgiving each
other,

For the honour and glory of God.

Why is computing important at our school?

Intent:

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems.

At St Anne's, we have a clear and simple vision for our teaching of computing: students at St Anne's should be confident, creative and safe users of technology.

For clarity of discussion, the teaching of computing is split into three strands:

1. Computer Science

Computer science is concerned with teaching students how computers work, including the internet, and is concerned with skills such as coding and programming.

2. Information Communication Technology (ICT)

The teaching of ICT is focussed on teaching students how to use machines and how they can be used to create and communicate to others.

3. Digital Literacy

Finally, digital literacy teaches students how to be safe, confident and healthy when they use digital devices.

At St Anne's we believe in the importance of teaching computing because this knowledge and skill will play a key role in the future of our students. The ability to use a computer is now an important skill for many careers, as well a large part of future careers that do not currently exist. By teaching our students computing, we are helping to ensure that they have access to as wide a range of these opportunities as possible. In addition to this, by teaching students how to create and communicate through computers (ICT), we are ensuring that they are not only able to be passive consumers of digital content through screens, but that they also know that they are able to use computers as tools, growing as individuals through using them to communicate and as a means of creative self-expression. Finally, we recognise the importance of teaching digital literacy as a means of creating confident users of computers, able to recognise the opportunities and potential dangers when they engage with the online world. In teaching digital literacy, we are teaching students to treat the digital world in the same way that we treat the society in which we live, and that their actions online have consequences in the physical world too.

Aims:

The national curriculum for computing aims to ensure that all pupils:

- Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Are responsible, competent, confident and creative users of information and communication technology.

Computing Curriculum Objectives Overview

Year One:

English National Curriculum Objectives (Key Stage 1)

National Curriculum Objective	Strand	Units
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	Computer Science	1.4 1.5 1.7
Create and debug simple programs	Computer Science	1.5 1.7
Use logical reasoning to predict the behaviour of simple programs.	Computer Science	1.5 1.7
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Information Technology	1.2 1.3 1.6 1.7 1.8
Recognise common uses of information technology beyond school	Digital Literacy	1.9
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.	Digital Literacy	1.1

Year Two:

English National Curriculum Objectives (Key Stage 1)

National Curriculum Objective	Strand	Units
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	Computer Science	2.1
Create and debug simple programs	Computer Science	2.1
Use logical reasoning to predict the behaviour of simple programs.	Computer Science	2.1
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Information Technology	2.3 2.4 2.5 2.6 2.7 2.8
Recognise common uses of information technology beyond school	Digital Literacy	2.5*
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.	Digital Literacy	2.2*

*And in other units when appropriate.

Year Three:

English National Curriculum Objectives (Key Stage 2)

National Curriculum Objective	Strand	Units
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Computer Science	3.1
Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer Science	3.1
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Computer Science	3.1
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.	Computer Science	3.5
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Information Technology	
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Information Technology	3.4 3.5 3.6 3.7 3.8
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Digital Literacy	3.2 3.5

Year Four:

English National Curriculum Objectives (Key Stage 2)

National Curriculum Objective	Strand	Units
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Computer Science	4.1 4.5
Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer Science	4.1 4.5
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Computer Science	4.1 4.5
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.	Computer Science	4.2 4.7 4.8
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Information Technology	4.7
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Information Technology	4.1 4.3 4.4 4.6 4.9
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Digital Literacy	4.2*

Year Five:

English National Curriculum Objectives (Key Stage 2)

National Curriculum Objective	Strand	Units
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Computer Science	5.1 5.5
Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer Science	5.1
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Computer Science	5.1
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.	Computer Science	5.2
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Information Technology	Various Search technologies are taught more specifically in unit 4.7. Children will utilize this knowledge in many Internet based sessions in all areas of the curriculum.
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Information Technology	5.1 5.3 5.4 5.5 5.6 5.7 5.8
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Digital Literacy	5.2 and discussed in other units

Year Six:

English National Curriculum Objectives (Key Stage 2)

National Curriculum Objective	Strand	Units
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Computer Science	6.1 6.5, 6.9
Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer Science	6.1
Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer Science	6.5
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Computer Science	6.1 6.5, 6.9
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.	Computer Science	6.2
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.	Computer Science	6.4
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.	Computer Science	6.6
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Information Technology	6.2
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Information Technology	6.1, 6.3 6.4, 6.5 6.7, 6.9
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact*.	Digital Literacy	6.2 6.4

*And discussed in other units.

Computing Curriculum Units Overview

Year 1 Whole Year Overview

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
YEAR 1	Unit 1.1 Online Safety & Exploring Purple Mash				Unit 1.2 Grouping & Sorting		Unit 1.3 Pictograms		Unit 1.4 Lego Builders			Unit 1.5 Maze Explorers		Unit 1.6 Animated Story Books			Unit 1.7 Coding			Unit 1.8 Spreadsheets		Unit 1.9 Technology outside school									
	Number of Weeks – 4 Tools Used – Avatar creator Paint Projects Writing Templates 2Count (Pictograms) 2Explore (Music)				Weeks – 2 Programs – 2Quiz		Weeks – 3 Programs – 2Count 2Connect		Weeks – 3 Programs – 2Quiz Paint Projects Writing Templates			Weeks – 3 Programs – 2Go		Weeks – 5 Programs – 2Create A Story			Weeks – 6 Programs – 2Code			Weeks – 3 Programs – 2Calculate		Weeks – 2 Programs – Writing Templates									

Year 2 Whole Year Overview

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
YEAR 2	Unit 2.1 Coding				Unit 2.2 Online Safety			Unit 2.3 Spreadsheets			Unit 2.4 Questioning				Unit 2.5 Effective Searching		Unit 2.6 Creating Pictures			Unit 2.7 Making Music		Unit 2.8 Presenting Ideas										
	Number of Weeks – 5 Main Programs – 2Code				Weeks – 3 Programs - Writing Templates Display boards 2Respond (2Email)			Weeks – 4 Programs – 2Calculate			Weeks – 5 Programs – 2Question, 2Investigate 2Calculate				Weeks – 3 Programs – Browser 2Quiz Writing Templates		Weeks – 5 Programs – 2Paint A Picture Writing Templates			Weeks – 3 Programs – 2Sequence		Weeks – 4 Programs – 2Connect (Mind Map) 2Create a Story (ebook) 2Quiz Writing Templates										

Year 3 Whole Year Overview

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
YEAR 3	Unit 3.1 Coding					Unit 3.2 Online Safety			Unit 3.3 Spreadsheets			Unit 3.4 Touch-Typing			Unit 3.5 Email (including email safety)			Unit 3.6 Branching Databases		Unit 3.7 Simulations		Unit 3.8 Graphing										
	Number of Weeks – 6 Main Programs – 2Code					Weeks – 3 Programs – 2Connect (Mind Map) 2Blog (Blogging) Writing Templates Display boards			Weeks – 3 Programs – 2Calculate			Weeks – 4 Programs – 2Type			Weeks – 6 Programs – 2Email			Weeks – 4 Programs – 2Question		Weeks – 3 Programs – 2Simulate, Writing Templates		Weeks – 3 Programs – 2Graph Writing Templates 2Blog (Blogging)										

Year 4 Whole Year Overview

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
YEAR 4	Unit 4.1 Coding						Unit 4.2 Online Safety				Unit 4.3 Spreadsheets					Unit 4.4 Writing for Different Audiences					Unit 4.5 Logo				Unit 4.6 Animation			Unit 4.7 Effective Searching			Unit 4.8 Hardware Investigators	
	Number of Weeks – 6 Main Programs – 2Code						Weeks – 4 Programs - 2Connect (Mind Map) 2Publish Plus Display boards				Weeks – 5 Programs – 2Calculate					Weeks – 5 Programs – Writing Templates 2Simulate 2Connect (Mind Map) 2Publish Plus					Weeks – 4 Programs – 2Logo				Weeks – 3 Programs – 2Animate			Weeks – 3 Programs – Browser 2Quiz 2Connect (Mind Map)			Weeks – 2 Programs – 2Quiz 2Connect (Mind Map) Writing Templates	

Year 5 Whole Year Overview

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
YEAR 5	Unit 5.1 Coding						Unit 5.2 Online Safety				Unit 5.3 Spreadsheets					Unit 5.4 Databases				Unit 5.5 Game Creator				Unit 5.6 3D Modelling			Unit 5.7 Concept Maps					
	Number of Weeks – 6 Main Programs – 2Code						Weeks – 3 Programs - 2Publish Plus Writing Templates Display boards 2Connect (Mind Map)				Weeks – 6 Programs – 2Calculate					Weeks – 4 Programs – 2Investigate (database) Avatar creator				Weeks – 5 Programs – 2DIY 3D Writing Templates 2Blog (Blogging)				Weeks – 4 Programs – 2Design and Make Writing Templates			Weeks – 4 Programs – 2Connect					

Year 6 Whole Year Overview

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
YEAR 6	Unit 6.1 Coding						Unit 6.2 Online Safety				Unit 6.3 Spreadsheets					Unit 6.4 Blogging				Unit 6.5 Text Adventures				Unit 6.6 Networks			Unit 6.7 Quizzing					
	Number of Weeks – 6 Main Programs – 2Code						Weeks – 3 Programs - 2DIY 3D 2DIY 2Code 2Blog (Blogging)				Weeks – 5 Programs – 2Calculate					Weeks – 4 Programs – 2Blog				Weeks – 5 Programs – 2Code, 2Connect, 2Create a Story, Writing Templates				Weeks – 3 Programs – 2Connect (Mind Map) Writing Templates			Weeks – 6 Programs – 2DIY 2Quiz Text Toolkit 2Investigate (database)					

Key Knowledge Concepts in Computing at our school?

Teaching of Computing at our school follows three main strands:

1. Computer Science & Computational Thinking
2. Information Technology
3. Digital Literacy

Each Strand is then sub-divided in different key areas of learning.

Strand 1: Computer Science & Computational Thinking		
Instruction Repetition Pattern Network Collaboration Goal Abstraction	Algorithm Code Input Internet Programming language	Sequence Debug Output Word-wide Web (WWW)
Strand 2: Information Technology		
Audience Engagement	Evaluation Manipulation	Interaction Creation/ Consumption
Strand 3: Digital Literacy		
Identity Self-image Interaction Consequence Reputation Digital Footprint Responsibility Community	Privacy Personal information Permission Ownership Reliability Fact Opinion Belief	Choice Intention Report/ call-out/ flag

Strand 1: Computer Science Key Knowledge

Sub-strands:

Computational thinking

- An **algorithm** is a set of commands in a certain sequence that can be used to accomplish a goal. These can be used orally and in writing as instructions (making a sandwich, drawing a picture) and well in coding.
- **Debugging** is a methodical, logical process for analysing why an algorithm has not worked.
- **Repetition** is used to make algorithms simpler: rather than writing 'spread the butter on the bread' out twice, we can simply say, 'repeat twice'.

Coding and programming

- Devices can be controlled with a variety of inputs. Students should know they can use a mouse, keyboard and touch screen to do this.
- Students should know that the sequence or order they give a machine instruction makes a difference to what the machine does.
- That instructions are given to machines using code: they should know that there are different types of code and that these work like a language to the machine. There are visual forms of code (Scratch) and text forms of code (HTML). They should know that the internet uses text codes such as HTML.

Computer networks and the internet (KS2 only)

- Computers are connected together in a network, either through wires or wirelessly
- There is a difference between the internet and world-wide web (WWW) – the internet is a global network of computer networks, while the world-wide web is a collection of information accessed through the internet.
- We access the internet through connecting to a server – a server processes the requests we make and manages the flow of information we get. Servers we use are located across the planet and might not be in our own country.
- The internet allows people to collaborate through sending information to each other.
- How search engines work and how they rank results when we search for something
- 'Web spiders' or 'crawlers' are programs that create an index that allows us to search the web.
- That web pages are created using a programming language called HTML (hypertext mark-up language)

Strand 2: Information Tecnology Key Knowledge

Sub-strands:

Word processing

- Typing can be done on both an on-screen keyboard (touch screen) and a physical keyboard
- A mouse moves a cursor across the screen
- The function of keys on a keyboard
- Space bar: To make spaces between words, Delete key: To delete both letters and words, Enter/return: To start a new line
- Images and other media can be inserted into a word document
- Cut, copy and paste can be used to duplicate and move text

Data Handling

- Programs such as Excel can be used to organise information
- These programs can be used to make charts to help us to understand information

Presenting Information

- Programs such as PowerPoint & SWAY are used by people to present information to audiences

Animation

- Devices can be used to change an image to look like it is moving
- Devices can be used to combine a series of images to make them look like they are moving f images, combining them together to create a moving image.
- Effects can be added to videos to add things that aren't really there (for example a green screen)
- Videos can be edited to make what was filmed look different to what actually happened

Strand 2: Information Tecnology Key Knowledge (Continued)

Sub-strands:

Video Creation

- There is a difference between photography and video – photography records one image; video takes lots of images, combining them together to create a moving image.
- Effects can be added to videos to add things that aren't really there (for example a green screen)
- Videos can be edited to make what was filmed look different to what actually happened

Augmented and virtual realities

- Augmented reality (AR) is using a program that is able to add an object on top of what is actually there when viewed through a screen. For example, pointing a phone screen at a picture and it will come to life whilst still being able to see the real environment around it.
- Virtual reality (VR) is using a program to create a whole environment that a user can engage with using a screen or a headset. VR totally blocks out the real environment around you.

Sound and music

- Programs and apps such as Garage Band can be used to create music. Examples of these are used to create music professionally across a variety of genres, such as creating drumbeats in dance music.
- Programs and apps are used to edit and add effects to music, and these are used in professional music production.

Strand 3: Digital Literacy Key Knowledge

Sub-strands:

Self-Image

- There may be people online who could make someone feel sad, embarrassed or upset
- That if anything upsets, embarrasses or makes someone feel sad, it can be reported to someone in real life or online
- Some people create identities for themselves online that are completely different to who they actually are
- People can manipulate images or videos to make themselves look better or worse, but that this is often not a real reflection of what they look like in real life.
- People's identities can be copied online
- Online media can affect the way we view ourselves and each other, for example in relation to gender.

Online relationships

- The internet can be used to communicate with people around the world in a variety of different ways, e.g. email, social media.
- It is important to be kind and considerate to people online
- That there are real consequences to how we choose to interact with people online. For example, people may get upset by what we say online.
- The internet allows people with similar likes and interests to form communities
- That technology has its own specific methods of communication, e.g. emojis and text speak.
- That trust can be taken back from someone online if they make us feel uncomfortable.
- Knowing someone online is different to knowing them in real life.
- Impulsive and rash communication can cause problems for others – that we need to think before we communicate online.
- There are ways of reporting communication online that we don't like.
- That the things we say, do and post online is stored permanently in our 'digital footprint' and that people use these to form an opinion of us in real life.

Online reputation

- That there are certain types of information that we should be cautious about sharing online e.g. address, phone numbers.
- That information we create online is stored permanently and can be copied.

Copyright and Ownership

- Things that people make or publish online belongs to them
- How to save work so that others know it belongs to me
- Copying work without permission can cause problems and have consequences.
- How to make references to other people's work and acknowledge sources that are used.

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Strand 3: Digital Literacy Key Knowledge (Continued)

Sub-strands:

Online bullying

- That some people choose to use the internet to be kind to people online
- Some examples of what bullying behaviour looks like online
- That people should do their best to call out bullying behaviour online
- People choosing to use bullying behaviour can be blocked and/or reported

Managing online information

- The internet can be used to find things out
- Not all the information that can be found on the web should be trusted
- Some information that can be found on the web is more reliable than others
- Some information that can be found on the web can look or seem real when in fact it is completely fictional
- The difference between facts, opinions and beliefs that can be seen on the web
- That some people intentionally use the web to publish false information to mislead people

Health, Wellbeing and lifestyle

- It is important to set rules to keep us healthy and safe when using technology
- To know some rules that can help to do the above, for example setting limits on screen time
- Spending too much time using technology can have negative effects on both physical health and mental health
- It is easy to spend a lot of time engaged with some types of technology, e.g. video games
- That some technologies, apps, programs and games can be addictive in the same way that physical substances are
- It is though that using technology too often can affect the quality of sleep we get
 - To know some ways of self-monitoring the time we spend using technology.

Privacy and Security

- Some types of information are called 'personal information' and should not be shared without thinking carefully first
- Passwords should be used to protect information and devices
- Information and media on the internet are other people's work and it belongs to them. It should not be copied without permission
- Devices, apps and programs can collect and share information about you with others
- Internet use can be monitored in various ways
- Some people use online content and communication to trick people into gaining their money and information illegally.

Key Computing Subject Discipline Skills

Strand 1: Computer Science Subject Discipline Skills

Sub-strands:

Computational thinking

- Ability to create oral and written algorithms
- Ability to alter sequences of instructions to achieve different effects
- Debugging algorithms that do not work correctly through systematic checking
- Predicting the outcome of algorithms before they are carried out
- Decomposing to break objects and processed down into easily manageable parts
- Using abstraction to focus on important information, making it easily understandable
- Using logical reasoning to detect and correct errors
- Critically evaluating work and suggesting improvements
- Identifying patterns in algorithms and using these to help construct new ones

Coding and programming

- Ability to use various forms of input e.g. mouse, track pads, keyboards and touchscreens to select options on a screen
- Creating and inputting a sequence of commands into a device
- Using logic to systematically identify and fix bugs in programs ('debugging')
- Creating programs on a variety of digital devices
- Using logical reasoning to predict the outcome of programs
- Simplifying programs by using repetition
- Working with various types of output e.g. sound, display
- Creating programs that simulate processes in the real world e.g. create a tennis game.
- Critically evaluating work and suggest improvements.
- Using different variables in programs created

Computer networks and the internet (KS2 only)

- Using search engines effectively, using key words etc
- Ability to create a basic webpage using HTML (year 6 only)

Strand 2: Information Technology Discipline Skills

Over-arching skills:

- Saving work so that it can be accessed later
- Using a variety of inputs including touch screens, physical and touch-screen keyboards, mouse and track pads
- Combining media such as text, films, images and sounds into once file
- Discussing the intended audience of the work and tailoring the content and style accordingly.
- Evaluating content and suggesting improvements

Sub-strands:

Word Processing

- Typing with increasing speed and accuracy
- Dictating short sentences into devices
- Copying and pasting images and text into a document
- Using cut, copy and paste effectively
- Combining images and text from different sources into a single document
- Using dictionary and thesaurus functions to improve work
- Inserting hyperlinks into a document

Data Handling

- Recording themselves explaining data and their observations
- Sorting objects and take a picture of this

KS1

Sorting images and text into different categories
Creating tally charts and pictograms

KS2

Inputting data into spreadsheets
Exporting data into charts & graphs
Using simple formulae in spreadsheets to perform calculations
Editing and formatting cells in a spreadsheet

Presenting Information

- Recording own voice and integrating into a presentation/picture
- Moving and resizing images
- Organising pictures to tell a story / create a story board
- Importing images from the web and device camera rolls
- Creating presentations that can be interacted with by the user by clicking sounds, videos etc

Strand 2: Information Technology Discipline Skills (Continued)

Animation

- Animating single pictures so that they move and/or speak
- Creating simple stop-motion animations using models
- Editing and enhancing animations with effects
- Mixing different animations and video together

Video Creation

- Recording short videos using camera functions of devices
- Watching films back on the devices being used
- Adding effects to videos
- Using green screens to add effects to videos
- Editing, trimming and cutting videos
 - Combining videos with other forms of media

Photography and digital art

- Taking a photo and look back at it on the device being used
- Using and explore painting apps
- Editing a photo using simple tools
 - Layering images on top of other images to create new images

Augmented and Virtual Realities

- Scanning QR codes
- Exploring interactive, 3D and 360-degree images
- Creating own images for exploration using augmented and virtual realities
 - Creating media such as posters that use augmented realities

Sound and music

- Recording and playing back sounds
- Exploring how to change the sound of recordings using effects
- Creating purposeful music compositions to suit a style or mood
- Using devices and apps to remix existing songs
- Combining music created with a film or presentation

Strand 3: Digital Literacy Skills

Sub-strands:

Self-image and Identity

- Reporting anything that makes people feel sad, uncomfortable and upset
- Representing self-online using avatars, social media etc
- Contributing to discussions about how digital media can shape aspects of identity such as gender, race etc.

Online Relationships

- Using the internet to communicate with other people
- Making positive contributions to online communities e.g. a class blog

Online Bullying

- Using a range of different methods of asking for support if they feel they are the subject of online bullying

Managing Online Information

- Using the internet through a variety of devices to find things out.
- Navigating webpages through using browser buttons such as forwards, back and links, tabs and sections of a webpage
- Using key phrases in using search engines
- Evaluating the reliability of different sources that are found when using the web

Health, Well-being and Lifestyle

- Demonstrating an awareness of how to use strategies to avoid negative consequences of using technology e.g. setting timers.

Privacy and Security

- Using simple strategies for creating passwords and keeping them safe.

Copyright and Ownership

- Using references to other sources used in own work

How do we know our children have made progress?

End point KS1

Strand 1: Computer Science

Students can:

Write algorithms

Students can:

- Understand decomposition as breaking objects/processes down to help them understand
- Predict outcomes of algorithms
- Write algorithms for everyday tasks
- Implement simple algorithms by inputting them into digital devices e.g. Bee Bots,
- Debug algorithms

Write programs

Students can:

- Predict the outcome of simple programs
- Create programs on a variety of digital devices
- Debug programs

Strand 2: Information

Technology

Students can:

- Type with increasing accuracy, using space bar and caps lock
- Use copy and paste to add images to a text document
- Sort digital objects into a range of charts such as Venn diagrams and Carroll diagrams using different software
- Create a branching database using questions
- Add voice recordings to storyboards
- Import images from the web and a device's camera roll
- Create a simple stop motion animation
- Write a record a video using a script, using
 - to add effects to their video
- Take and edit a photo using a device
- Select and use software to create a digital image from scratch
- Create own images to explore using augmented reality
- Create a musical composition using software

Strand 3: Digital

Literacy

Students can:

- Describe ways in which people can make themselves look different to real life online
- Give examples of issues online that make them feel sad, worried or frightened, and describe how to get help
- Use the internet to communicate with people I don't know well
- Give examples of how to use technology to communicate to people I don't know well
- Explain how information about me online lasts a long time
- Know who to talk to if they think someone has made a mistake by putting something online
 - Give examples of how bullying behaviour looks online and how this makes people feel
- Explain who to talk to about being bullied online
- Navigate web pages by using links, forwards and back buttons
- Use keywords in search engines to find information
- Explain why some information online might not be true
- Explain simple rules for using technology in a healthy, safe way including limiting screen time.

End point Lower KS2

Strand 1: Computer Science

Students can:

Write algorithms

Students can:

- Decompose a task into separate steps to create an algorithm
- Identify patterns in algorithms
- Write increasingly precise algorithms which they can turn into programs
- Use repetition in the algorithms that they write
- Use simple selection in the algorithms that they write
- Use logical reasoning to systematically detect and correct errors in algorithms

Write programs

Students can:

- Design and create programs that accomplish specific goals
- Use repetition in programs that they create
- Use simple selection in programs
- Work with various forms of input and output when implementing programs e.g. sound, screen
- Use logical reasoning to systematically detect and correct errors in algorithms and programs

Understand computer networks

Students can:

- Explain why computers are connected in networks
- Explain the difference between the internet and the World Wide Web (WWW)
- Explain how email is sent across the internet

Strand 2:

Information Technology

Students can:

- Type increasingly faster and with more efficiency than the end of KS1
- Use text shortcuts including cut, copy and paste to organise text
- Alter the appearance of their word document (e.g. by changing font) for audience and purpose
- Use spell check and thesaurus functions to improve their work
- Create their own multiple-choice questionnaire online
- Input data into a spreadsheet and export it into a variety of graphs and charts
- Create an interactive eBook quiz that uses hyperlinks, text, images and sound
- Create a presentation that uses a range of media
- Create a digital timeline or mind map
- Create animations using software and drawing tools
- Use green screen effects in the videos they create
- Add music and sound effects to videos
- Enhance photos using crop, brightness, contrast and resize tools
- Create an animated GIF
- Use augmented reality objects to help explain a concept
- Record a simple audio podca

Strand 3: Digital

Literacy

Students can:

- Explain how online identity can be different to real identity
- Describe the right decisions about interacting with people online
- Give examples of how to be respectful to others online
- Describe how others can find information about me by looking online
- Describe ways in which personal information can be created, copied and shared online
- Describe ways in which different media (e.g. image, video, text, chat) can be used to bully people
- Explain the need to think about how what they post online could affect other people
- Differentiate between opinions, beliefs and facts that they might see online
- Describe methods used to encourage people to buy things online
- Explain that there are computer programs (bots) that pretend to be real people online
- Explain how technology can distract people from doing things they might/should be doing
- Identify situations and strategies to help limit screen time
- Explain what makes a strong password
- Explain how to keep personal information private online
- Explain that people can pretend to me or other people online
- Consider, when searching online
- Consider, when searching online, who owns content and whether they have the right to use it

End point Upper KS2

Strand 1: Computer Science

Students can:

Write algorithms

Students can:

- Decompose a task into separate steps to create an algorithm
- Identify patterns in algorithms
- Write increasingly precise algorithms which they can turn into programs
- Use repetition in the algorithms that they write
- Use simple selection in the algorithms that they write
- Use logical reasoning to systematically detect and correct errors in algorithms

Write programs

Students can:

- Design and create programs that accomplish specific goals
- Use repetition in programs that they create
- Use simple selection in programs
- Work with various forms of input and output when implementing programs e.g. sound, screen
- Use logical reasoning to systematically detect and correct errors in algorithms and programs

Strand 2: Information Technology

Students can choose from a range of different apps and programs to create their own media, weighing up pros and cons of each app or program that they might choose.

Students can:

- Type with greater speed and accuracy than the end of lower KS2
- Format their word documents to a style that suits audience and purpose
- Write spreadsheet formulae to perform calculations with data
- Make their own choices of which applications/software to use to present information
- Create a simple web site that uses a variety of media
- Mix animations and video recordings
- Create videos using a range of media – green screen, animation, film and image
- Edit a picture to remove items, add backgrounds and merge images
- Use 3D drawing software to
- create original, realistic representations of objects
- Create an interactive poster using augmented reality
- Add voice over and edit sound clips to use in film or radio broadcast

Strand 3: Digital Literacy

Students can:

- Explain how identity online can be copied, modified or altered
- Discuss how online media might shape ideas and attitudes towards identity e.g. filters to change appearance and their relation to self-image, gender roles.
- Describe issues online that might make themselves or others sad, worried or frightened, and how to get help on and offline
- Understand responsibilities for the well-being of others in an online social group
- Explain how impulsive and rash communication can cause problems, e.g. flaming, content produced in live streaming
- Demonstrate ways of reporting content online
- Explain the benefits of developing a positive online reputation
- Describe how to capture bullying content as evidence (e.g. screen capture) to share with others that can help me
- Use search engines effectively
- Demonstrate strategies for evaluating digital content
- Explain how people may present opinion as fact online
- Define the terms 'influence' 'manipulate. and 'persuade' and explain how I might encounter these online
- Identify, flag and report inappropriate content

Understand computer networks

Students can:

- Explain why computers are connected in networks
- Explain the difference between the internet and the World Wide Web (WWW)
- Explain how email is sent across the internet
- Explain that servers are located across the planet
- Appreciate how the internet helps us to collaborate

- Describe common systems that regulate age-related content (e.g. PEGI, BBFC)
- Explain the importance of self-regulating use of technology
- Describe effective strategies toward managing different passwords for different online services
- Explain what app permissions are and what they do
- Describe how to use privacy settings to limit access to content posted online
- Explain and describe strategies for gaining money or information illegally (e.g. scams, phishing)
- Demonstrate how to search and find content online that can be used by others (.e.g. Open Source)
- Demonstrate how to make references and acknowledge sources used from the internet.

How does our school ensure progression in our key knowledge and concepts in Computing?

- Curriculum identifies points where comparisons can be made
- Opportunities for applying skills are not just limited to use of technology but are also applied to solving problems 'unplugged' in the real world
- Subject-specific vocabulary is consistently used and applied in teaching throughout school
 - Knowledge taught gradually becomes more in depth, increasing in complexity and independence
 - Uses of technology and ICT are embedded in subjects across the curriculum to allow students to apply and practice their skills
- Philosophical questions related to computing are included in teaching of PSHE and E-Safety including issues such as privacy, responsibility and time for discussion of the potentially positive and negative effect that technology can have on our lives.
- Children are given the opportunity to gain an understanding of the complexity of how technology is linked and collaborates across the globe.
- Clear progression for each strand of the computing curriculum through Purple Mash ensures that each teacher knows the progression of skills and knowledge across year groups
- Specific differentiation document for teaching of computing lessons informs teachers of how to ensure progression within their year group and individual lessons.

Progression in Vocabulary

Key Computing Vocabulary Strand 1: Computer Science

EYFS	KS1	LKS2	UKS2
Instruction Pattern Sequence	Algorithm Sequence Debug/Debugging Program Decomposition Code	Algorithm Sequence Debug/Debugging Program Decomposition Abstraction Repetition Selection Input Output Network Internet World Wide Web (WWW) Server Collaborate Code Search engine Browser	Algorithm Sequence Debug/Debugging Program Decomposition Abstraction Repetition Selection Input Output Network Internet World Wide Web (WWW) Server Collaborate. Web spider Variable Web crawler Simulation Search engine Repletion Browser Code HTML

Key Computing Vocabulary

Strand 2: Information Technology

EYFS	KS1	LKS2	UKS2
Mouse Keyboard Chart Record Animation Photograph Video	Space bar Delete Enter/return Copy Paste Caps lock Data Tally chart Pictogram Label Sequence Record Trigger image Effects Augmented - Reality (AR) Virtual Reality (VR) Import Branching database	Cut Copy Paste Data Spreadsheet Interactive Annotate Web page Stop motion Edit Green screen Effects Manipulate Augmented - Reality (AR) Virtual Reality (VR) Mood Audience Enhance Font Questionnaire Export Shortcut	Hyperlink Import Enhance Audience Organise Formula / formulae Format Collaborative Embed Web page Web site Green screen Stop motion GIF Cutaway Subtitle Enhance Realistic Augmented - Reality (AR) Virtual Reality (VR) Podcast Radio broadcast Remix

Key Computing Vocabulary

Strand 3: Digital Literacy

EYFS	KS1	LKS2	UKS2
Communicate Information Internet Personal information Trust Share	Report Trust Identity Communicate Considerate Digital Footprint Cyberbullying Keyword Webpage Navigate 'made up'/ 'make believe' Personal information Password Copyright Ownership	Identity Represent Avatar Identity theft Responsibility Interaction Trust Virtual community Digital footprint Cyberbullying Report Flag Reputation Autocomplete Belief/opinion/fact Advertising Promotion Distraction Engage	Identity Identity theft Responsible choice Gender Judgement Inappropriate Influence Positive/negative contribution Impulsive Supportive Report/flag Digital footprint Reputation Cyberbullying Blocking/muting users Screenshot Misinformation Scepticism Hoax Inaccurate Belief/opinion/fact Search engine Ranking (search engine results) Discerning Regulatory systems (e.g. PEGI rating) Self-regulation Personal/private information Password Privacy Scam Reference Acknowledge

Computing Skills Vocabulary

Strand 1: Computer Science

EYFS	KS1	LKS2	UKS2
Sequence Input (verb)	Understand Sequence Debug Predict Decompose Locate Fix Reasoning	Programming Decompose Abstraction Identify Repetition Precision Debug Fix Detect Correct Design Reasoning Systematic Understand Sequence Predict Locate	Programming Decompose Abstraction Identify Repetition Precision Debug Fix Detect Correct Design Reasoning Systematic Understand Sequence Predict Locate Evaluate Suggest Simulate Appreciate Remix

Computing Skills Vocabulary

Strand 2: Information Technology

EYFS	KS1	LKS2	UKS2
Type Dictate Identify Sort Present Create Record Animate Explore	Type Dictate Identify Sort Present Create Record Animate Explore Collect Capture Insert Import Explain Alter/ edit Cut Copy	Type Dictate Identify Sort Present Create Record Animate Explore Collect Capture Insert Import Explain Alter/ edit Cut Copy Combine Engage Duplicate Input (verb) Publish Format Export Manipulate Evaluate	Type Collaborate Dictate Embed Identify Sort Present Create Record Animate Explore Collect Capture Insert Import Explain Alter/ edit Cut Copy Combine Engage Duplicate Input (verb) Publish Format Export Manipulate

Computing Skills Vocabulary

Strand 3: Digital Literacy

EYFS	KS1	LKS2	UKS2
<p>Recognise Explain Give examples Identify Describe</p>	<p>Recognise Explain Give examples Identify Describe Communicate Consideration Search Demonstrate Report</p>	<p>Recognise Explain Give examples Identify Describe Communicate Consideration Search Demonstrate Report Analyse Evaluate Assess</p>	<p>Recognise Explain Give examples Identify Describe Communicate Consideration Search Demonstrate Report Analyse Evaluate Assess Challenge Discuss Contribute Define Justify</p>