Ashbourne Primary School's
Computing and Online Safety Scheme Of Work with skills and knowledge progression

Intent:

Computing at Ashbourne Primary School fosters curiosity, enquiry, safety and confidence by developing the skills pupils need to become safe, responsible and competent users of ever-advancing technologies. Our work is underpinned by our vision and aims: 'Nurturing aspiration through happy, creative learning'. Our PRAISE aims are at the heart of every lesson and our focus on the removal of barriers to learning is firmly embedded into all areas of the Computing curriculum. Online safety is at the forefront of our Computing teaching; children are supported to ensure and evaluate their safe use of online spaces throughout all lessons and within our discreet Online Safety Week. At Ashbourne Primary School, children are supported to develop skills across all areas of Computing, from information technology and coding to an understanding of how to keep safe in a digital world. Computing is embedded within all areas of the curriculum; children are taught skills discretely, but also given the opportunity to apply these in a variety of contexts. While they are at Ashbourne Primary School, every child will have the opportunity to develop their communication skills by using a diverse range of programs; for example, using stop motion animation to tell a story or using Scratch to develop a game or quiz about their learning in History or Geography. Computer Ambassadors from Key Stage Two classes help to support and promote Computing within the school. Links are also established with Queen Elizabeth Grammar School to enrich the curriculum with further coding opportunities, in order to raise aspirations and deepen community links. At Ashbourne Primary School, technology is used as a tool to engage learners, enhance learning and equip them with the skills and knowledge they will need in a rapidly changing technological world. In EYFS and Key Stage 1, children develop their basic knowledge of and skills in Computing, begin to learn how to code and gain an insight into how to keep safe online. In lower Key Stage 2, children deepen their understanding and apply what they have learned to use a wider range of programs, create programs of their own and explore what safe communication looks like. As they progress into Upper Key Stage 2, children built on their prior learning, create more elaborate programs of their own and explore the positive and negative impacts of social media. This is based on the principal that learning has only happened when processes and facts (knowledge) are in pupils' long-term memory. This takes time and repetition. Planning the curriculum in this way allows pupils to establish fundamental foundations into memory before advancing and applying concepts across a range of topics.

National Curriculum Aims

- 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

KS1 Content	KS2 Content
• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of 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 safety and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about material on the internet or other online technologies	• 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, selections and repetition in programs; work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms works 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 (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 • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

EYFS: Understanding The World

The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas. The aim of this document is to help subject leaders to understand how the skills taught across EYFS feed into national curriculum subjects. This document demonstrates which statements from the 2020 Development Matters are prerequisite skills for computing within the national curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for computing. The most relevant statements for computing are taken from the following areas of learning:

- Personal, Social and Emotional Development
- Physical Development
- Understanding the World
- Expressive Arts and Design

3-4 year olds	Personal, Social and Emotional Development		• Remember rules without needing an adult to remind them.
	Physical Development		• Match their developing physical skills to tasks and activities in the setting.
	Understanding the World		• Explore how things work.
Reception	Personal, Social and Emotional Development		• Show resilience and perseverance in the face of a challenge • Know and talk about the different factors that support their overall health and wellbeing: - sensible amounts of 'screen time'.
	Physical Development		• Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
	Expressive Arts and Design		• Explore, use and refine a variety of artistic effects to express their ideas and feelings.
ELG	Personal, Social and Emotional Development	Managing Self	• Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. • Explain the reasons for rules, know right from wrong and try to behave accordingly.
	Expressive Arts and Design	Creating with Materials	• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Computing skills and knowledge progression from Y1-Y6

Year Group	Computing Systems and Networks	Creating Media	Programming	Data and Information	Online Safety	Key Vocab	Resources
KS1 **Year 1**	**<u>Technology Around Us</u>** - I can identify technology - I can identify a computer and its main parts - I can use a mouse in different ways - I can use a	**<u>Digital Painting</u>** - I can describe what freehand tools do - I can use the shape and line tools - I can make careful choices when painting	**<u>Programming Animations (Scratch Jr)</u>** - I can choose a command for a given purpose - I can join a series of commands together - I can identify the effect of	**<u>Grouping Data (through maths)</u>** - I can label objects - I can identify that objects can be counted - I can describe objects in different ways	- I can explore what the internet is and how it connects us to others - I can search the internet safely - I can explain what to keep private online - I can own my creative work	Technology Computer Mouse Keyboard Tools Shape Line Command Instruction Algorithm Data	Paintz.app MS Paint MS Word MS PowerPoint Scratch Jr

	keyboard to type on a computer - I can use a keyboard to edit text - I can create rules for using technology safely	- I can explain why I chose specific tools - I can use a computer independently - I can compare painting on a computer and on paper	changing a value - I can explain that each sprite has its own instructions - I can design the parts of a project - I can use an algorithm to create a program	- I can count objects with the same properties - I can compare groups of objects - I can answer questions about a group of objects	- I can explain what I know about keeping safe online		
						Key Vocab	**Resources**
KS1 **Year 2**	**<u>IT Around Us</u>** - I can recognise the uses and features of information technology - I can identify the uses of information technology in the school - I can identify technology beyond school - I can explain how information technology helps us - I can explain how to use information technology safely - I can recognise that choices are made when using information	**<u>Digital Photography</u>** - I can use a digital device to take a photographs - I can make choices when taking a photograph - I can describe what makes an effective photograph - I can describe how a photo can be improved - I can use tools to change an image - I can recognise that photos can be changed	**<u>Programming Quizzes (Scratch Jr)</u>** - I can explain that a sequence of commands has a start - I can explain that a sequence of commands has an outcome - I can create a program using a given design - I can change a given design - I can create a program using my own design - I can decide how my project can be improved	**<u>Pictograms (through maths)</u>** - I can recognise that we can count and compare using tally charts - I can recognise that pictures can be represented as pictures - I can create a pictogram - I can select objects by attribute and make comparisons - I can recognise that people can be described by attributes - I can explain that we can present information using a computer	- I can understand that some websites are appropriate for children and some are not - I can understand that my information leaves a 'digital footprint' - I can understand how to be a good friend online and what 'cyberbullying' is - I can search the internet using keywords - I can explore how accurate different websites are	Information Technology Computer Photograph Digital Landscape Portrait Tools Edited	MS PowerPoint iPad cameras j2e.com/j2data Scratch Jr

	technology						
						Key Vocab	**Resources**
LWKS2 **Year 3**	**Connecting Computers** - I can explain how digital devices function - I can identify input and output devices - I can recognise how digital devices can change the way we work - I can explain how a computer network can be used to share information - I can explore how digital devices can be connected - I can recognise the physical components of a network	**Desktop Publishing** - I can recognise how text and images convey information - Recognise that text and layout can be edited - I can choose appropriate page settings - I can add content to a publication - I can consider how different layouts can suit different purposes - I can consider the benefits of desktop publishing	**Sequencing Sounds (Scratch)** - I can explore a new programming environment (Scratch) - I can identify that commands have an outcome - I can explain that a program has a start - I can recognise that a sequence of commands has an order - I can change the appearance of my project - I can create a project from a task description	**Branching Databases** - I can create questions with yes/no answers - I can indentify the attributes needed to collect data about an object - I can create a branching database - I can explain why it is helpful for a database to be well-structured - I can plan the structure of a branching database - I can create an identification tool	- I can explain the importance of effective passwords - I can understand how the internet can create a community online - I can explore product websites and how they work - I know how to show respect online - I can communicate effectively by email	Digital device Input Output Network Connection Publish Text Image Layout Purpose Algorithm Programming Sequence Branching Attributes Database Identification	MS Paint Scratch J2e.com/j2data MS Word Canva.com
						Key Vocab	**Resources**
LWKS2 **Year 4**	**The Internet** - I can describe how networks physically connect to others - I can recognise how networked devices make up the internet - I can outline how websites	**Photo Editing** - I can explain that digital images can be changed - I can explain that colours can be changed in digital images - I can explain how cloning can be used in photo editing	**Repetition in Games (Scratch)** - I can use count-controlled loops - I can explain that in programming there are infinite loops and count controlled loops - I can develop a design that includes two or	**Data Logging** - I can explain the data gathered over time can be used to answer questions - I can use a digital device to collect data automatically - I can explain how a data logger	- I can explore how to be responsible and respectable on and offline - I can understand what information should and should not be shared online - I can say what to do if I receive hurtful messages online - I can search the	Internet Network Connection Device Website World Wide Web Content Digital image Editing Cloning Infinite loop Count controlled loop	Paint.NET Pixlr Photo editor BeFunky Scratch Arduino Science Journal Log Box Data loggers

	can be shared via the World Wide Web - I can describe how content can be added and accessed on the World Wide Web - I can recognise how the content of the World Wide Web is created by people - I can evaluate consequences of unreliable content online	- I can explain how images can be combined - I can combine images for a purpose - I can evaluate how changes can improve an image	more loops - I can modify an infinite loop - I can design a project that includes repetition - I can create a project that includes repetition	collects data over time - I can recognise how a computer can help us analyse data - I can identify the data needed to answer questions - I can use data to answer questions	internet accurately and effectively - I can understand plagiarism and when it is and isn't okay to use the work of others	Repetition Data Device Analyse	
						Key Vocab	**Resources**
UPKS2 **Year 5**	**<u>Systems and Searching</u>** - I can explain that computers can be connected to form systems - I can recognise the role of computer systems in our lives - I can experiment with search engines - I can describe how search engines select results - I can explain	**<u>Video Production</u>** - I can explain what makes a video effective - I can identify devices that can record video - I can capture video using a range of techniques - I can create a storyboard - I can identify that video can be improved through reshooting and editing - I can consider the impact of the	**<u>Selection in Quizzes (Scratch)</u>** - I can explain how selection is using in programming - I can relate that a conditional statement connects a condition to an outcome - I can explain how selection directs the flow of a program - I can design a program which uses selection - I can create a program which	**<u>Flat-file Databases</u>** - I can use a form to record information - I can compare paper and computer-based databases - I can outline how you can answer questions by grouping and sorting data - I can explain that tools can be used to look for specific data - I can explain that computer programs can be	- I can create a secure password - I can understand the expectations and responsibilities of a 'digital citizen' - I can identify spam and how to deal with it - I can cite a source for research - I can understand how photos can be altered digitally and how this can impact others	System Search engine Results Ranking Video Storyboard Sharing Programming Conditional statement Selection Flow Database Data Sorting Compare	Google Slides MS Photos Spark Video Scratch J2e.com/j2data

	how search results are ranked - I can recognise why the order of results are important and to whom	choices made when making a sharing videos	uses selection - I can evaluate my program	used to compare data visually - I can use a real-world database to answer questions			
						Key Vocab	**Resources**
UPKS2 **Year 6**	**<u>Communication and Collaboration</u>** - I can explain the importance of internet addresses - I can recognise how data is transferred across the internet - I can explain how sharing information online can help people to work together - I can evaluate different ways of working together online - I can recognise how we communicate using technology - I can evaluate different methods of online communication	**<u>3D Modelling</u>** - I can recognise that you can work in three dimensions on a computer - I can identify that 3D objects can be modified - I can recognise that objects can be combined in a 3D model - I can create a 3D model for a given purpose - I can plan my own 3D model - I can create my own 3D model	**<u>Variables in Games (Scratch)</u>** - I can define a 'variable' as something that is changeable - I can explain why a variable is used in a program - I can choose how to improve a game using variables - I can design a project that builds on a given example - I can use my design to create a project - I can evaluate my project	**<u>Introduction to Spreadsheets</u>** - I can create a data set in a spreadsheet - I can build a data set in a spreadsheet - I can explain that formulas can be used to produce calculated data - I can apply formulas to data - I can create a spreadsheet to plan an event - I can choose suitable ways to present data	- I can understand how to talk to others safely online - I can understand my own responsibilities as a 'digital citizen' - I can identify secure sites that protect my information - I can explain what 'cyberbullying' is and explain strategies for dealing with it - I can explore how the media can shape our ideas and reinforce stereotypes	Internet Address Data Sharing Collaboration Communication Three Dimensional Modelling Variable If/then Data set Spreadsheet	Google Slides Tinkercad Scratch MS Excel Google Sheets

Impact:

We assess the impact of our curriculum by checking that our children know more and remember more. Teachers ensure pupils regularly revisit prior learning over time. This ensures learning is embedded into pupils' long-term memory. Explain your learning is one of the school's PRAISE aims and this skill ensures children can confidently articulate what they know and have learned. Teachers and leaders monitor the impact of the curriculum through:

- Key questioning
- Observations within lessons
- Outcomes from tasks/topics
- Flashback Friday
- Regularly revisiting flashcards
- Memory Minute
- Pupil voice
- Learning walks
- Curriculum Team reviews