Computing

Progression of Skills and Knowledge Document

Computing at Moorfield Primary School

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Introduction:

The purpose of this document is to outline the approach and method that has been adopted to implement the Computing curriculum at Moorfield. It sets out what we aim to achieve and the knowledge and understanding that we have apportioned to each class and key stage. The decisions made have been done so by reference to the school's Mission Statement, the staff and Governing Body's vision for the future of our school. This document summarises the organisation of the Computing curriculum and the school's method of securing children's entitlement to essential knowledge and skills to equip them for the next stage of their education and for later life.

Aims

- To ensure standards remain high and English and Maths is taught discretely
- To ensure reading remains a high priority
- To utilize the rich resource and history of our local community of Irlam
- To support our school's values and ethos
- To ensure pupils leave as 'well rounded' and confident individuals
- To ensure the wider sports curriculum and the arts are a key focus

Curriculum End Points

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. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Intent

The use of information and communication technology is an integral part of the national curriculum and is a key skill for everyday life. Computers, tablets, programmable toys, digital and video cameras are a few of the tools that can be used to acquire, organise, store, manipulate, interpret, communicate and present information. We recognise that pupils are entitled to quality hardware and software and a

structured and progressive approach to the learning of the skills needed to enable them to use it effectively. ICT will be integrated into all other subjects as appropriate and used as a tool to enhance other learning. ICT capability will be delivered through use of the KAPOW scheme. Internet safety lessons are delivered through the KAPOW Scheme.

Implementation

We provide a relevant, challenging and enjoyable curriculum for ICT and computing for all pupils, meeting the requirements of the national curriculum programmes of study for computing. Throughout the school we use computing as a tool to enhance learning throughout the curriculum. It is important to respond to new developments in technology and to equip pupils with the confidence and capability to use computing throughout their later life. Pupils enhance learning in other areas of the curriculum using computing and continually develop the understanding of how to use computing safely and responsibly.

We have three threshold Concepts in Computing:

- **Digital Literacy and Online Safety**
- **Computational Thinking**
- **Computers and Hardware**

Computing Long Term Plan

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	**Early Years Foundation Stage** Kapow Primary's units	Early years outcomes: Prime Areas **Development Matters 2021 statements** Early Learning Goals				Early years outcomes: Specific Areas **Development Matters 2021 statements** Early Learning Goals	
	Exploring hardware	**Communication and Language** -Learn new vocabulary. -Use new vocabulary throughout the day. -Ask questions to find out more and to check they understand what has been said to them. -Articulate their thoughts and ideas in well-formed sentences. -Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. **Personal, Social and Emotional Development** -See themselves as a valuable individual **Physical Development** -Develop their small motor skills so that they can use a range of tools competently, safely and confidently. -Confidently and safely use a range of large and small apparatus indoors and outside, alone and in a group.				**Literacy** -Spell words by identifying the sounds and then writing the sounds with letter/s. -Write short sentences with known letter-sound correspondences using a capital and full stop. **Understanding the World** -Describe what they see, hear and feel whilst outside.	
	Programming: Bee Bots	**Personal, Social and Emotional Development** -**ELG**: Managing Self> Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.				**Mathematics** -Count objects, actions and sounds. -Link the number symbol (numeral) with its cardinal number value. -Count beyond 10.	
	All about instructions	**Communication and Language** -Understand how to listen carefully and why listening is important. -Describe events in some detail. -Use talk to help work our problems and organise thinking and activities, and to explain how things work and why they might happen. **Personal, Social and Emotional Development** -**ELG**: Self-Regulation> Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions. -**ELG**: Managing Self> Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. -**ELG**: Building Relationships> Work and play cooperatively and take turns with others. **Physical Development** -Know and talk about the different factors that support their overall health and wellbeing. -Further develop the skills they need to manage the school day successfully.					

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Early Years Foundation Stage Kapow Primary's units	Early years outcomes: Prime Areas **Development Matters 2021 Statements** Early Learning Goals	Early years outcomes: Specific Areas **Development Matters 2021 Statements** Early Learning Goals
Sorting and categorising: Introduction to data	**Communication and Language** -Articulate their thoughts and ideas in well-formed sentences. -Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. **-ELG**: Listening, Attention and Understanding> Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. **-ELG**: Listening, Attention and Understanding> Make comments about what they have heard and ask questions to clarify their understanding. **-ELG**:Speaking> Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.	**Mathematics** **-ELG**:Numerical Patterns> Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. -Count objects, actions and sounds. -Subitise. -Count beyond 10. -Compare numbers. -Understand the 'one more than/ one less than' relationship between consecutive numbers. -Continue, copy and create repeating patterns. -Compare length, weight and capacity.
Using a computer	**Physical Development** -Develop their small motor skills so that they can use a range of tools competently, safely and confidently.	**Literacy** -Spell words by identifying the sounds and then writing the sounds with letter/s. -Re-read what they have written to check that it makes sense. **Mathematics** -Link the number symbol (numeral) with its cardinal number value.

Please refer to our other guidance for Computing provision in EYFS:

Supporting a child-led project using technology
Computing through continuous provision

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Yr 1	**Getting started** Introducing children to logging in and using technology for a purpose, including creating art	**Programming Bee Bots** Using Bee-Bots to navigate an area and constructing simple algorithms, through the story of The Three Little Pigs	**Algorithms unplugged** Learning how computers handle information by exploring 'unplugged' algorithms- completing tasks away from the computer	**Digital imagery** Taking and manipulating digital photographs, including adding images found via a search engine	**Introduction to data** Learning about what data is and how it can be represented and using these skills to show the findings of a mini beast hunt	**Rocket to the moon** Appreciating the value of computers, understanding that they helped us get to the moon **Online safety** An introduction to online safety: children learn what it means to be 'online' and how to stay safe whilst treating others with respect.
Yr 2	**What is a computer?** Children explore what a computer is, learning about inputs and outputs, how computers are used in the wider world and designing an invention	**Word processing** Using their developing word processing skills, pupils write simple messages to friends and learn why we must be careful about who we talk to online	**Programming: ScratchJr** Using 'ScratchJr', pupils programme a familiar story and an animation, make their own musical instruments and follow an algorithm to record a joke	**Algorithms and debugging** Identifying problems with code using both 'unplugged' and 'plugged' systems to debug (identify and correct) errors in an algorithm	**International Space Station** Building on their understanding of how computers sense the world around us, pupils learn how data is collected and used to keep astronauts safe on the I.S.S	**Stop motion** Pupils create simple animations, storyboarding their ideas then decomposing it into small parts of action to be captured. **Online safety** Pupils learn about how to keep personal information safe online, including their right to give or deny permission for information to be shared online
Yr 3	**Emailing** Pupils learn how to send emails, including attachments and how to be responsible digital	**Journey inside a computer** Children learn about the different parts of a computer through role-	**Top trumps databases** Developing their understanding of data and databases, children play with and create	**Digital literacy** Developing their video skills, pupils create a book trailer, storyboarding their	**Programming: Scratch** Using Scratch, with its block-based approach to coding, pupils learn to tell stories and create	**Networks and the internet** To understand how computers communicate, children

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	citizens	play and develop their understanding of how they follow instructions	their own Top Trumps cards, learning how to interpret information by ordering and filtering	trailers before then filming and editing their videos, adding effects such as transitions, music, voice and text.	simple games.	learn about networks and the internet, and how they are used to share information. **Online safety** Understanding that you can't trust everything you read on the internet. Learning about social media platforms including their age-restrictions and privacy settings.
Yr 4	**Collaborative learning** Learning to work collaboratively in a responsible way using tools including Google Docs and Sheets	**Further coding with Scratch** The coding program Scratch is explored further by revisiting key features and introducing the children to the crucial concept and execution of using 'variables' in code scripts.	**Website design** Pupils design and create their own websites, considering content and style, as well as understanding the importance of working collaboratively	**HTML** Pupils explore the language behind well-known websites, while developing their understanding of how to change the core characteristics of a website using HTML and CSS	**Investigating weather** Children investigate the role of computers in forecasting and recording weather as well as how technology is used to present forecasts	**Computational thinking** Through developing their understanding of the four pillars of computational thinking, children learn to identify them in differenx`t contexts **Online safety** Pupils develop their understanding of how to identify trustworthy information online and consider the implications of technology.
Yr 5	**Online safety** Considering online communication and the effects on mental health and wellbeing. **Micro:bit** Programming a small	**Search engines** To enable children to quickly and accurately find information and become independent learners, they need to develop their searching skills and learn how to	**Programming Music** Composing music using code through Sonic Pi or Scratch pupils can compose simple tunes culminating in a 'battle of the bands' using loops of music	**Mars Rover 1** Pupils explore inputs and outputs as well as Binary numbers to understand how the Mars Rover transmits and receives data and how scientists are able	**Mars Rover 2** Children learn how the Mars Rover is able to send images all the way back to Earth and experiment with online CAD software to design new tyres for it	**Stop motion animation** Collaboratively creating a stop-motion animation by sharing and then decomposing their ideas . Pupils will develop their ability to edit and improve their creations.

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	device called a micro:bit to display animations or messages on its simple LED display using block coding	identify trustworthy sources		to control it to explore another planet!		
Yr 6	**Bletchley Park 1** Children learn about the history of Bletchley Park, including: key historical figures, how the first modern computers were created at as part of a WWII code breaking team and consider how computers have evolved over time. They then go on to investigate secret codes and how they are created, exploring 'brute force' hacking and learn how to make passwords more secure	**Bletchley Park 2** Children learn about the history of Bletchley Park, including: key historical figures, how the first modern computers were created at as part of a WWII code breaking team and consider how computers have evolved over time. They then go on to investigate secret codes and how they are created, exploring 'brute force' hacking and learn how to make passwords more secure	**Intro to Python** Building on their knowledge of coding from previous years, children are introduced to the text-based programming language Python, which is the language behind many apps and programs, such as Dropbox	**Big Data 1** Children learn how data is collected and stored by exploring barcodes, QR codes and RFID chips, and investigate how collecting big data can be used to help people in a variety of different scenarios	**Big Data 2** Children learn the difference between mobile data and WiFi and how data is transferred and use their understanding of big data to design their own smart school	**Skills showcase** Reflecting on and showcasing their computing skills, pupils create an entire project around a specific theme **Online safety** Learning about the impact and consequences of sharing information online; exploring how to develop a positive online reputation that will benefit the children in the long term; capturing evidence techniques and methods to combat online bullying

Skills and content coverage

Please see the KAPOW Computing Curriculum Overview for the National Curriculum Content covered by the above as well as the knowledge that will be acquired by the children during each Computing Topic. The KAPOW Computing Curriculum Overview also contains the key vocabulary the children will focus on during each topic they study.

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