



Three Peaks Primary Academy

Computing

Through the Computing curriculum at Three Peaks Primary Academy, we aim to give our pupils the life-skills necessary to embrace and utilise technology in a safe and responsible manner. We believe that through our computing teaching, we are preparing children for workplaces of the future, jobs that may not have even been invented yet, and giving them the skills to truly thrive in the 21st century. Children will become independent users of a range of technologies and devices to become digitally literate. Our programme provides opportunities to develop computational thinking and problem solving skills as well as creativity and resilience. We use a variety of hardware and software to support learning across the curriculum and in bespoke practices to ensure accessibility for every child. We aim to instil a love of computing in our pupils to encourage further study of the subject and create digital citizens with an understanding of themselves within their local and global community.



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Aims of the Computing Curriculum

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

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

Our Computing curriculum allows children to create digital work through a range of hardware and software.

The curriculum is based around 4 key themes :

- Computational thinking (abstraction, decomposition, pattern recognition and algorithms)
- E-safety
- Digital literacy
- Computers and hardware



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Computing in Early Years

Our EYFS lessons are a natural precursor to our Year 1 Computing plans. They are designed especially for the Reception classroom and are play-based, hands-on and fun!

Whilst the technology strand is no longer a specific area in the new EYFS framework (2021), having the opportunity to develop computing skills at an early age can foster interest and confidence in technology and give pupils an advantage going into KS1.

Children in the Early Years learn best through play and practical application of skills



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Key Stage 1

Computing National Curriculum Expectations – Key Stage 1.:

Pupils should be taught to :

- 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.



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Key Stage 2

Computing National Curriculum Expectations – Key Stage 2.:

Pupils should be taught to :

- 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 (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.



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Computing Topic Overview

	Unit 1	Unit 2	Unit 3	Unit 4
	Computing systems and networks	Programming 1	Programming 2	Data Handling
EYFS	Using a computer (5 lessons)	All about instructions (5 lessons)	Programming Bee-Bots (5 lessons)	Introduction to data (5 lessons)
	Computing systems and networks	Programming 1	Programming 2	Data Handling
Year 1	Improving mouse skills (5 lessons)	Algorithms unplugged (5 lessons)	Programming (Option 1: Bee-Bot) Programming (Option 2: Virtual Bee-Bot) (5 lessons)	Introduction to data (5 lessons)
	Computing systems and networks 1	Programming	Online safety	Data Handling
Year 2	What is a computer? (5 lessons)	Algorithms and debugging (5 lessons)	Online safety Y2 (5 lessons)	International Space Station (5 lessons)
	Computing systems and networks 1	Programming	Computing systems and networks 3	Creating media
Year 3	Networks and the internet (5 lessons)	Programming: Scratch (5 lessons)	Journey inside a computer (5 lessons)	Video trailers (Option 1: Using devices other than iPads) (Option 2: Using iPads) (5 lessons)
	Computing systems and networks	Programming 1	Skills showcase	Programming 2
Year 4	Collaborative learning (5 lessons)	Further coding with Scratch (5 lessons)	HTML (5 lessons)	Computational thinking (5 lessons)
	Computing systems and networks	Programming	Data Handling	Online safety
Year 5	Search engines (5 lessons)	Programming music (Option 1: Sonic Pi) (Option 2: Scratch) (5 lessons)	Mars Rover 1 (5 lessons)	Online safety Y5 (5 lessons)
	Computing systems and networks	Programming	Data Handling	Creating media
Year 6	Bletchley Park (5 lessons)	Intro to Python (5 lessons)	Big data 1 (5 lessons)	History of computers (5 lessons)

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Computing—Implementation

At Three Peaks Primary Academy, Computing is taught through our modular curriculum and is adapted from Kapow lesson plans and resources. The modules enable pupils to study in depth key computational understanding, digital skills and vocabulary. Each module aims to activate and build upon prior learning to ensure better cognition and retention. Each module is carefully sequenced to enable pupils to purposefully layer learning from previous sessions to facilitate the acquisition and retention of key knowledge. Individual modules and lessons build on knowledge that has previously been taught. Outcomes are revisited either later in the year or in the following year as part of a spaced retrieval practice method to ensure pupils retain key knowledge and information.

Planning

All modules have sequenced planning from Kapow detailing sessions, key concepts, knowledge and vocabulary to be taught. Kapow's lessons make use of freely available software and develop pupils' knowledge across five areas of learning: Digital Literacy, Online Safety, Computational Thinking, Computers and Hardware.

These feature guidance videos for teachers subject knowledge, teaching videos and teaching slides. Teachers adapt these plans to differentiate or adhere to individual needs of their class. All planning is also adapted to incorporate our established cooperative learning techniques, key vocabulary and core concepts.

Knowledge Notes

Accompanying each module is a Knowledge Organiser which contains key vocabulary, information and concepts which all pupils are expected to understand and retain. Knowledge organisers help pupils acquire the content of each module and are continually referenced through planning and in the classroom. Knowledge Notes support vocabulary and concept acquisition through a well-structured sequence that is cumulative. Knowledge Organisers and Knowledge Notes are frequently dual coded to provide pupils with visual calls to aid understanding and recall. Knowledge Organisers are referenced throughout each module and on subsequent related learning and copies of the Knowledge Organiser are sent home to families to support with home learning. In addition, pupils can access at home key learning platforms that are used in school e.g. Scratch, Sketchpad, Python as well as more well known tools such as Microsoft Office and the Google platform.

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Computing—Implementation

Digital Literacy

A range of hardware and software are regularly planned into lessons in other areas of the curriculum. Chromebooks and interactive whiteboards are integrated into learning. Frequently used software tools include Microsoft Excel, Powerpoint and Word as well as now familiar software such as Teams. Kahoot quizzes can be used for elicitation, recall and consolidation. Kapow introduces a variety of software tools such as Sketchpad, LunaPic, Scratch and Turtle Academy which can then be revisited across year groups. Teachers have opportunities to plan in ad hoc Computing skills to increase cross-curricular coverage using any of the above tools or something else that would aid in the learning objective. At Three Peaks, we assign reading levels through Accelerated Reader which pupils are also expected to access to complete online quizzes. Every child from Year 2 to Year 6 has a Times Tables Rockstars account that they can access at home and school to practice their times tables on any device. There are weekly battles among classes to constantly encourage use. All homework is set digitally and the school uses My Maths and Sumdog to so facilitate instantly responsive maths homework. All of the above serve to create a cohort of digitally literate children growing up with technology.

Vocabulary

Vocabulary forms a key part of our wider curriculum. Progression of computing vocabulary allows teachers to be aware of what vocabulary has already been introduced and how they build on this already learnt vocabulary. Children are encouraged to use the correct art vocabulary when discussing their work, others work and art skills.



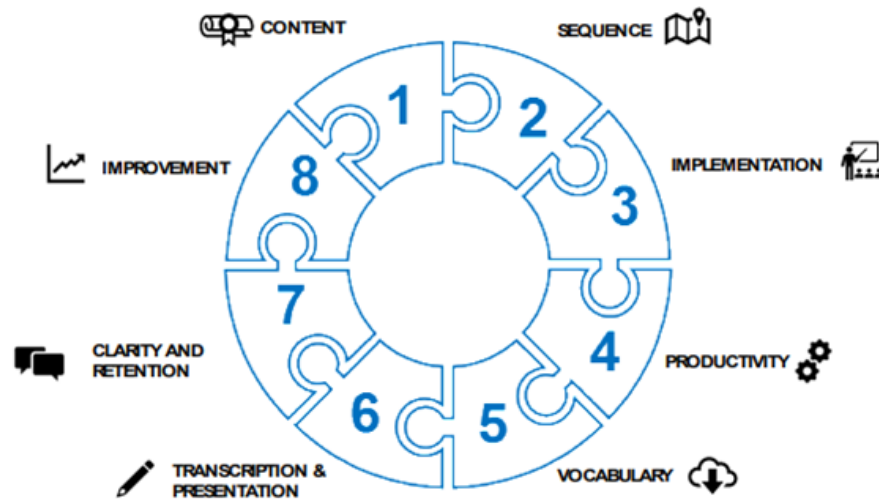
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Impact will be assessed through :

Pupil Book Study

Senior leaders and subject leaders regularly undertake book studies to monitor the effectiveness of teaching and learning. This includes sessions with small groups of pupils using questioning to check and ensure information and knowledge is acquired and understood with increasing confidence. Feedback is given to teaching staff to inform future planning.

QUALITY ASSURE books through studying:



Ongoing Teacher Assessment

Teachers assess pupils throughout each session . Pupils who are identified as needing support will be supported either during post teaching interventions or in the following session as appropriate. Pupils working at above expected standard will also be identified and challenged appropriately to extend their learning. Evidence of this support or challenge and necessary feedback will be clear in books.



Coverage Maps

Kapow Primary	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer science	Hardware						
Information technology	<ul style="list-style-type: none"> Learning how to operate a camera to take photographs of meaningful creations or moments 	<ul style="list-style-type: none"> Learning how to explore and tinker with hardware to find out how it works 	<ul style="list-style-type: none"> Understanding what a computer is and that it's made up of different components 	<ul style="list-style-type: none"> Understanding what the different components of a computer do and how they work together 	<ul style="list-style-type: none"> Learning about the purpose of routers 	<ul style="list-style-type: none"> Learning that external devices can be programmed by a separate computer 	<ul style="list-style-type: none"> Learning about the history of computers and how they have evolved over time
Digital literacy	<ul style="list-style-type: none"> Learning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary Learning how to operate a camera Recognising that a range of technology is used in places such as homes and schools Learning what a keyboard is and how to locate relevant keys Learning what a mouse is and developing basic mouse skills such as moving and clicking 	<ul style="list-style-type: none"> Understanding that computers and devices around us use inputs and outputs, identifying some of these Learning where keys are located on the keyboard Learning how to operate a camera 	<ul style="list-style-type: none"> Recognising that buttons cause effects and that technology follows instructions Learning how we know that technology is doing what we want it to do via its output. Using greater control when taking photos with tablets or computers Developing confidence with the keyboard and the basics of touch typing 	<ul style="list-style-type: none"> Drawing comparisons across different types of computers Learning what a server does 		<ul style="list-style-type: none"> Learning the difference between ROM and RAM Recognising how the size of RAM affects the processing of data Understanding the fetch, decode, execute cycle 	<ul style="list-style-type: none"> Using the understanding of historic computers to design a computer of the future Understanding and identifying barcodes, QR codes and RFID Identifying devices and applications that can scan or read barcodes, QR codes and RFID Acknowledging that corruption can happen within data during transfer (for example when downloading, installing, copying and updating files)

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Kapow Primary	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer science	Computational thinking						
Information technology	<ul style="list-style-type: none"> Using logical reasoning to read simple instructions and predict the outcome 	<ul style="list-style-type: none"> Learning that decomposition means breaking a problem down into smaller parts 	<ul style="list-style-type: none"> Articulating what decomposition is Decomposing a game to predict the algorithms used to create it 	<ul style="list-style-type: none"> Using decomposition to explain the parts of a laptop computer Using decomposition to explore the code behind an animation 	<ul style="list-style-type: none"> Solving unplugged problems by decomposing them into smaller parts Using decomposition to understand the purpose of a script of code 	<ul style="list-style-type: none"> Decomposing animations into a series of images Decomposing a program without support 	<ul style="list-style-type: none"> Decomposing a program into an algorithm Using past experiences to help solve new problems
Digital literacy		<ul style="list-style-type: none"> Using decomposition to solve unplugged challenges Using logical reasoning to predict the behaviour of simple programs Developing the skills associated with sequencing in unplugged activities Learning that an algorithm is a set of step by step instructions used to carry out a task, in a specific order Follow a basic set of instructions Assembling instructions into a simple algorithm 	<ul style="list-style-type: none"> Using decomposition to decompose a story into smaller parts Learning what abstraction is Learning that there are different levels of abstraction Explaining what an algorithm is Following an algorithm Creating a clear and precise algorithm Learning that computers use algorithms to make predictions Learning that programs execute by following precise instructions Incorporating loops within algorithms 	<ul style="list-style-type: none"> Using repetition in programs Understanding that computers follow instructions Using an algorithm to explain the roles of different parts of a computer Using logical reasoning to explain how simple algorithms work Explaining the purpose of an algorithm Forming algorithms independently 	<ul style="list-style-type: none"> Using decomposition to help solve problems Identifying patterns through unplugged activities Using past experiences to help solve new problems Using abstraction to identify the important parts when completing both plugged and unplugged activities Creating algorithms for a specific purpose 	<ul style="list-style-type: none"> Predicting how software will work based on previous experience Writing more complex algorithms for a purpose 	




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Kapow Primary	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer science	Programming						
Information technology	<ul style="list-style-type: none"> Following instructions as part of practical activities and games and learning to debug when things go wrong Learning to give simple instructions Learning that an algorithm is a set of instructions to carry out a task, in a specific order Experimenting with programming a Bee-bot/Blue-bot and learning how to give simple commands Learning to debug instructions, with the help of an adult, when things go wrong 	<ul style="list-style-type: none"> Programming a Bee-bot/Virtual Bee-bot to follow a planned route Learning to debug instructions when things go wrong Developing a how-to video to explain how the Bee-bot works. Learning to debug an algorithm in an unplugged scenario 	<ul style="list-style-type: none"> Using logical thinking to explore software, predicting, testing and explaining what it does Using an algorithm to write a basic computer program Learning what loops are Incorporating loops to make code more efficient 	<ul style="list-style-type: none"> Using logical thinking to explore more complex software; predicting, testing and explaining what it does Incorporating loops to make code more efficient Remixing existing code Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected 	<ul style="list-style-type: none"> Understanding that websites can be altered by exploring the code beneath the site Coding a simple game Using abstraction and pattern recognition to modify code Incorporating variables to make code more efficient Remixing existing code Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected 	<ul style="list-style-type: none"> Programming an animation Iterating and developing their programming as they work Beginning to use nested loops (loops within loops) Debugging their own code Writing code to create a desired effect Using a range of programming commands Using repetition within a program Amending code within a live scenario 	<ul style="list-style-type: none"> Debugging quickly and effectively to make a program more efficient Remixing existing code to explore a problem Using and adapting nested loops Programming using the language Python Changing a program to personalise it Evaluating code to understand its purpose Predicting code and adapting it to a chosen purpose Altering a website's code to create changes
Digital literacy							



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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer science	Using software						
Information technology	<ul style="list-style-type: none"> Using a simple online paint tool to create digital art 	<ul style="list-style-type: none"> Using a basic range of tools within graphic editing software Taking and editing photographs Understanding how to create digital art using an online paint tool Developing control of the mouse through dragging, clicking and resizing of images to create different effects Developing understanding of different software tools 	<ul style="list-style-type: none"> Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts Using word processing software to type and reformat text Using software to create story animations Creating and labelling images 	<ul style="list-style-type: none"> Taking photographs and recording video to tell a story. Using software to edit and enhance their video adding music, sounds and text on screen with transitions 	<ul style="list-style-type: none"> Building a web page and creating content for it Designing and creating a webpage for a given purpose Use Google online software for documents, presentations, forms and spreadsheets. Work collaboratively with others 	<ul style="list-style-type: none"> Using logical thinking to explore software more independently, making predictions based on their previous experience Using a software programme (Sonic Pi or Scratch) to create music Using video editing software or animation software to animate Identify ways to improve and edit programs, videos, images etc. Independently learning how to use 3D design software package TinkerCAD 	<ul style="list-style-type: none"> Using logical thinking to explore software independently, iterating ideas and testing continuously Using search and word processing skills to create a presentation Planning, recording and editing a radio play Creating and editing sound recordings for a specific purpose Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions to create a video advert Using design software TinkerCAD to design a product Creating a website with embedded links and multiple pages
Digital literacy							



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Kapow Primary	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer science	Using email and the internet						
Information technology	<ul style="list-style-type: none"> Participating in group image searches, led by the teacher 	<ul style="list-style-type: none"> Searching and downloading images from the internet safely Understanding that we are connected to others when using the internet 	<ul style="list-style-type: none"> Understanding that personal information should not be shared on the internet. Learning how to be respectful to others when sharing content online. 	<ul style="list-style-type: none"> Learning to log in and out of an email account Writing an email including a subject, 'to' and 'from' Sending an email with an attachment Replying to an email Identifying useful terms and phrases for search engines 	<ul style="list-style-type: none"> Understanding why some results come before others when searching Understanding that information on the internet is not all grounded in fact 	<ul style="list-style-type: none"> Developing searching skills to help find relevant information on the internet Understanding how apps can access our personal information and how to alter the permissions. 	<ul style="list-style-type: none"> Understanding how search engines work
Digital literacy	Using data						
	<ul style="list-style-type: none"> Representing data through sorting and categorising objects in unplugged scenarios Representing data through pictograms Exploring branch databases through physical games 	<ul style="list-style-type: none"> Introduction to spreadsheets Representing data in tables, charts and pictograms Sorting data and creating branching databases Identifying where digital content can have advantages over paper when storing and manipulating data 	<ul style="list-style-type: none"> Collecting and inputting data into a spreadsheet Interpreting data 	<ul style="list-style-type: none"> Understanding the vocabulary associated with databases: field, record, data Learning about the pros and cons of digital versus paper databases Sorting and filtering databases to easily retrieve information Creating and interpreting charts and graphs to understand data 	<ul style="list-style-type: none"> Designing a weather station which gathers and records sensor data 	<ul style="list-style-type: none"> Understanding how data is collected 	<ul style="list-style-type: none"> Understanding how barcodes, QR codes and RFID work Gathering and analysing data in real time Creating formulas and sorting data within spreadsheets



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Kapow Primary	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer science							
Information technology	<ul style="list-style-type: none"> Recognising that a range of technology is used in places such as homes and schools 	<ul style="list-style-type: none"> Logging in and out and saving work on their own account Understand the importance of a password 	<ul style="list-style-type: none"> Understanding that personal information should not be shared on the internet. 	<ul style="list-style-type: none"> Learning to be a responsible digital citizen; understanding their responsibilities to treat others respectfully and recognising when digital behaviour is unkind 	<ul style="list-style-type: none"> Recognising what appropriate behaviour is when collaborating with others online Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others Learning about different forms of advertising on the internet. 	<ul style="list-style-type: none"> Learning about how permissions work and how to change them Identifying possible issues with online communication Considering the effects of screen-time on physical and mental wellbeing Learning about online bullying and where to seek advice 	<ul style="list-style-type: none"> Understanding the importance of secure passwords and how to create them, along with two-step authentication Using search engines safely and effectively Recognising that updated software can help to prevent data corruption and hacking Considering their digital footprint and online reputation and future implications they may have Learning about how to collect evidence and report online bullying concerns
Digital literacy	<ul style="list-style-type: none"> Learning to log in and log out 	<ul style="list-style-type: none"> When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable Recognising when someone has been unkind online Learning some top tips for staying safe online Understanding how we 'share' information on the internet 	<ul style="list-style-type: none"> Learning how to be respectful to others when sharing content online. 	<ul style="list-style-type: none"> Learning about cyberbullying Learning that not all emails are genuine, recognising when an email might be fake and what to do about it Learning that not all information on the internet is factual Understanding who personal information should/ should not be shared with 			