

PICKHURST ACADEMY - COMPUTING PROGRESSION MAP

WHERE EVERY CHILD COUNTS

OUR CORE VALUES

We want all of our children to BE **P.I.C.K.H.U.R.S.T**

<u>P</u> roud	<u>I</u> nquisitive	<u>C</u> onfident	<u>K</u> ind	<u>H</u> ealthy	<u>U</u> nderstanding	<u>R</u> espectful	<u>S</u> uccessful	<u>T</u> rustworthy
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CULTURAL CAPITAL

Pickhurst Academy is committed to ensuring all of our pupils are equipped with the knowledge and cultural capital they need to succeed in life. Our curriculum and provision ensure that all our pupils acquire the essential knowledge they need to be educated citizens. We ensure that we are introducing them to the best that has been thought and said, and it is our mission to engender an appreciation of human creativity and achievement. We want all of our pupils to leave Pickhurst, by the end of KS2, with aspirational goals for their future, without any limitations.

We have carefully considered four domains for promoting and improving each child's level of cultural capital based on research by Bourdieu (1986). We believe that the more cultural capital a child has, the more likely they are to succeed in life and reach their potential.

KNOWLEDGE (what we know)	SKILLS (what we do)	APPRECIATION (what we value)	ASPIRATION (who we want to be)
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INTENT	IMPLEMENTATION	IMPACT	PROGRESSION
Kapow Primary Computing provides a computing curriculum that is ambitious and designed for all pupils. It is coherently planned and sequenced towards cumulatively providing the necessary knowledge and skills for the pupils' future to empower them to take their role as future coders and app designers. It emphasises the role of teamwork and collaborative creations to build to a final outcome and comes with suggestions for differentiated approaches to teaching. The children build on knowledge centred around a theme and revisits commonly used learning tools, such as Scratch to build a spiral curriculum. It provides concrete and abstract methods of teaching; the children are not always sat at a computer as they sometimes have physical tasks to complete related to the topic. Following the scheme will ensure pupils benefit from a curriculum that prepares them for a future where computers are at the heart of most employment opportunities and gives them the tools they need to be able to succeed in a future that is unknown.	Kapow Primary Computing is designed to be delivered by non-specialists, with core computing knowledge identified and explained throughout. The lesson plans come with subject knowledge and videos for anyone less confident in using and teaching computers. The lessons, provided by the class teacher, will be 1 hour in length. A breadth of teaching approaches appropriate to the content and desired learning outcomes are used to engage all pupils and enable them to not just acquire knowledge but to apply it in meaningful contexts. The lesson plans also come with suggested differentiation opportunities to allow all children to achieve the same outcome, but at different levels. Revisiting software and skills in different, more challenging, contexts in later units. It also provides suggestions of how to assess the children's learning. Quality resources and materials are provided online to support the computing curriculum and are sequenced towards the accumulation of skills, knowledge and understanding, working towards the next key stage.	The impact of Kapow Primary Computing is evidenced through the pupils' use and implementation of key computing skills and their understanding of vocabulary and key terms. It is evidenced by the use and outcomes of the varied activities, assessments and quizzes provided. The broad range of approaches for pupils to communicate their knowledge ensures that everyone can demonstrate progression and impact. In particular, it is evidenced by the pupils' ability, willingness and confidence in using the key computing skill independently and with purpose. Pupils are offered opportunities to understand how computing skills will be key to attaining future job roles and specialisms.	All pupils work on the same core tasks with accompanying materials. The scheme provides extension opportunities through questioning and linking to other subjects and skills. It is designed as a spiral curriculum, so key activities, tools and software will be revisited at a higher level later in school. Those that are not sufficiently confident may be targeted for extra support and a suggestion for this is provided with each lesson plan, often relating to making the key concept more accessible by giving concrete examples. This enables progression to be identified, planned for, developed and monitored. Progress in developing skills and understanding concepts is achieved through meaningful connections with real world situations that each tool, app or concept might be linked to.

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TEACHER SUBJECT KNOWLEDGE & SUBJECT DEVELOPMENT

Subject knowledge for teachers

Kapow Primary Computing focuses on the subject as an individual discipline, and it sets high expectations for the quality of teaching within the subject. However, the structure and levels of support within the scheme consider that most primary teachers and many computing subject leads are not subject specialists. The core computing knowledge needed by each teacher is identified in the unit overview and key skills are provided as recorded videos by specialists. A resource list with useful quality websites and resources is included to support further teacher research.

Computing for the Future

Teachers will need to be adaptable and willing to learn alongside the children. We are working towards an unknown future and each unit is designed to engage the children in a single aspect of the potential possibilities for using computers in their futures. Therefore, we understand that the computing curriculum is not only about discovery, but also trial and error. The computing teaching and curriculum will improve as teachers and pupils become more familiar with the structure of lessons. The wide range of software used will require that teachers familiarise themselves beforehand to ensure that their teaching of the new skills builds on the spiral curriculum that Kapow provides.

Over time, we are confident that this new curriculum base will be an invaluable, engaging resource for years to come. It will allow us to confidently show development in the children's understanding and appreciation for technology. We want the children to flourish in a future that may be more heavily reliant on the adaptive skills that we teach through computing.

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<u>National Curriculum</u>	KS2			
	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Computing Knowledge: Digital Literacy and Online Safety <i>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</i> <i>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i> <i>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</i> <i>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</i>	Unit 1: Networks and the internet (5 lessons) To understand how computers communicate, children learn about networks and the internet, and how they are used to share information Unit 3: Emailing (5 lessons) Pupils learn how to send emails, including attachments and how to be responsible digital citizens Unit 6: Comparison Cards databases (5 lessons) Developing their understanding of data and databases, children play with and create their own Top Trumps cards, learning how to interpret information by ordering and filtering Unit 5: Video Trailers (5 lessons) Developing their video skills, pupils create a book trailer, storyboarding their trailers before then filming and editing their videos, adding effects such as transitions, music, voice and text. Online safety Year 3 (4 lessons) Understanding that you can't trust everything you read on the internet. Learning about social media platforms including their age-restrictions and privacy settings.	Unit 1: Collaborative learning (5 lessons) Learning to work collaboratively in a responsible way using tools including Google Docs and Sheets Unit 3: Website design (5 lessons) Pupils design and create their own websites, considering content and style, as well as understanding the importance of working collaboratively Unit 4: HTML (5 lessons) 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 Unit 6: Investigating weather (5 lessons) Children investigate the role of computers in forecasting and recording weather as well as how technology is used to present forecasts Online safety Year 4 (6 lessons) Pupils develop their understanding of how to identify trustworthy	Unit 1: Search engines (5 lessons) To enable children to quickly and accurately find information and become independent learners, they need to develop their searching skills and learn how to identify trustworthy Sources Unit 2: Music (5 lessons) 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 Unit 3: Mars Rover 1 (5 lessons) 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 to control it to explore another planet! Unit 6: Mars Rover 2 (5 lessons) 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 Online safety Year 5 (5 lessons)	Unit 1: Bletchley Park (5 lessons) Children learn about the history of Bletchley Park, including: key historical figures, how the first modern computers were created 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 Unit 3: Big Data 1 (5 lessons) 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. Unit 4: History of Computers (5 lessons) In the second part of the Bletchley Park topic children learn to write, record and edit radio plays set during WWII, look back in time at how computers have evolved from being larger than a room to fitting into the palm of your hand, and design a computer of the future. Unit 5: Big Data 2 (5 lessons) 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 Unit 6: Inventing a Product (5 lessons) Reflecting on and showcasing their computing skills, pupils create an entire project around a specific theme Online safety Year 6 (6 lessons) 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

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		information online and consider the implications of technology.	Considering online communication and the effects on mental health and wellbeing.	
Computing Knowledge: Computational Thinking <i>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</i> <i>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</i> <i>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i> <i>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</i>	Unit 2: Programming: Scratch (5 lessons) Using Scratch, with its block-based approach to coding, pupils learn to tell stories and create simple games. Unit 4: Journey inside a computer (5 lessons) Children learn about the different parts of a computer through role-play and develop their understanding of how they follow instructions	Unit 2: Further Coding with Scratch (6 lessons) 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. Unit 4: HTML (5 lessons) 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 Unit 5: Computational thinking (5 lessons) Through developing their understanding of the four pillars of computational thinking, children learn to identify them in different contexts Unit 6: Investigating weather (5 lessons) Children investigate the role of computers in forecasting and recording weather as well as how technology is used	Unit 2: Music (5 lessons) 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 Unit 4: Micro:bit (5 lessons) Programming a small device called a micro:bit to display animations or messages on its simple LED display using block Coding. Unit 5: Stop motion animation (5 lessons) Collaboratively creating a stop-motion animation by sharing and then decomposing their ideas. Pupils will develop their ability to edit and improve their creations.	Unit 1: Bletchley Park 1 (5 lessons) Children learn about the history of Bletchley Park, including: key historical figures, how the first modern computers were created 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 Unit 2: Intro to Python (5 lessons) 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 Unit 6: Inventing a Product (5 lessons) Reflecting on and showcasing their computing skills, pupils create an entire project around a specific theme

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		to present forecasts		
Computing Concepts: Computers and Hardware <i>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</i> <i>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i>	Unit 1: Networks and the internet (5 lessons) To understand how computers communicate, children learn about networks and the internet, and how they are used to share information. Unit 4: Journey inside a computer (5 lessons) Children learn about the different parts of a computer through role-play and develop their understanding of how they follow instructions		Unit 3: Mars Rover 1 (5 lessons) 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 to control it to explore another planet! Unit 4: Micro:bit (5 lessons) Programming a small device called a micro:bit to display animations or messages on its simple LED display using block Coding. Unit 5: Stop motion animation (5 lessons) Collaboratively creating a stop-motion animation by sharing and then decomposing their ideas. Pupils will develop their ability to edit and improve their creations. Unit 6: Mars Rover 2 (5 lessons) 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 Online safety Year 5 (5 lessons) Considering online communication and the effects on mental health and wellbeing.	Unit 3: Big Data 1 (5 lessons) 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 Unit 4: History of Computers (5 lessons) In the second part of the Bletchley Park topic children learn to write, record and edit radio plays set during WWII, look back in time at how computers have evolved from being larger than a room to fitting into the palm of your hand, and design a computer of the future. Unit 6: Inventing a Product (5 lessons) Reflecting on and showcasing their computing skills, pupils create an entire project around a specific theme

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