Computing

Long-term plan

Standard

Our full 36-week EYFS, KS1 and KS2 long-term plan for **Computing** is designed for schools that deliver the subject each week.

This document is regularly updated to reflect changes in our content. This version was created on 17.12.2024.

Please visit this link to download the current version.

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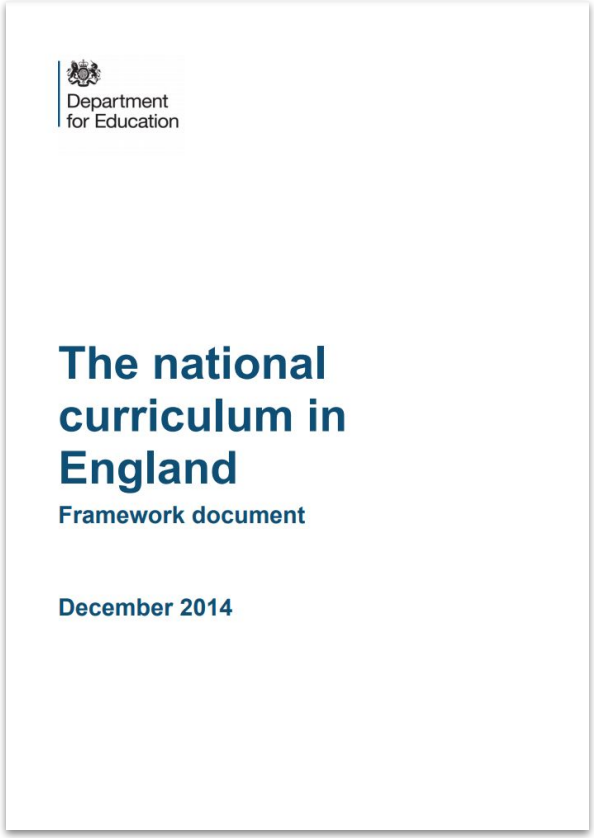
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How does Kapow Primary help our school to meet the statutory guidance for computing?

Our scheme of work fulfils the statutory requirements for computing outlined in the **National curriculum (2014)** and, when used in conjunction with our RSE & PSHE scheme, also covers the government's **Education for a Connected World -2020 edition** framework (see our Education for a Connected World framework mapping).



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How does Kapow Primary's scheme of work align with the National curriculum?

Our scheme of work fulfils the statutory requirements outlined in the **National curriculum (2014)**. The National Curriculum Programme of Study for Computing aims to ensure that all pupils:

We have identified these three strands which run throughout our scheme of work:

- ★ 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.

Computer Science

- ★ Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.

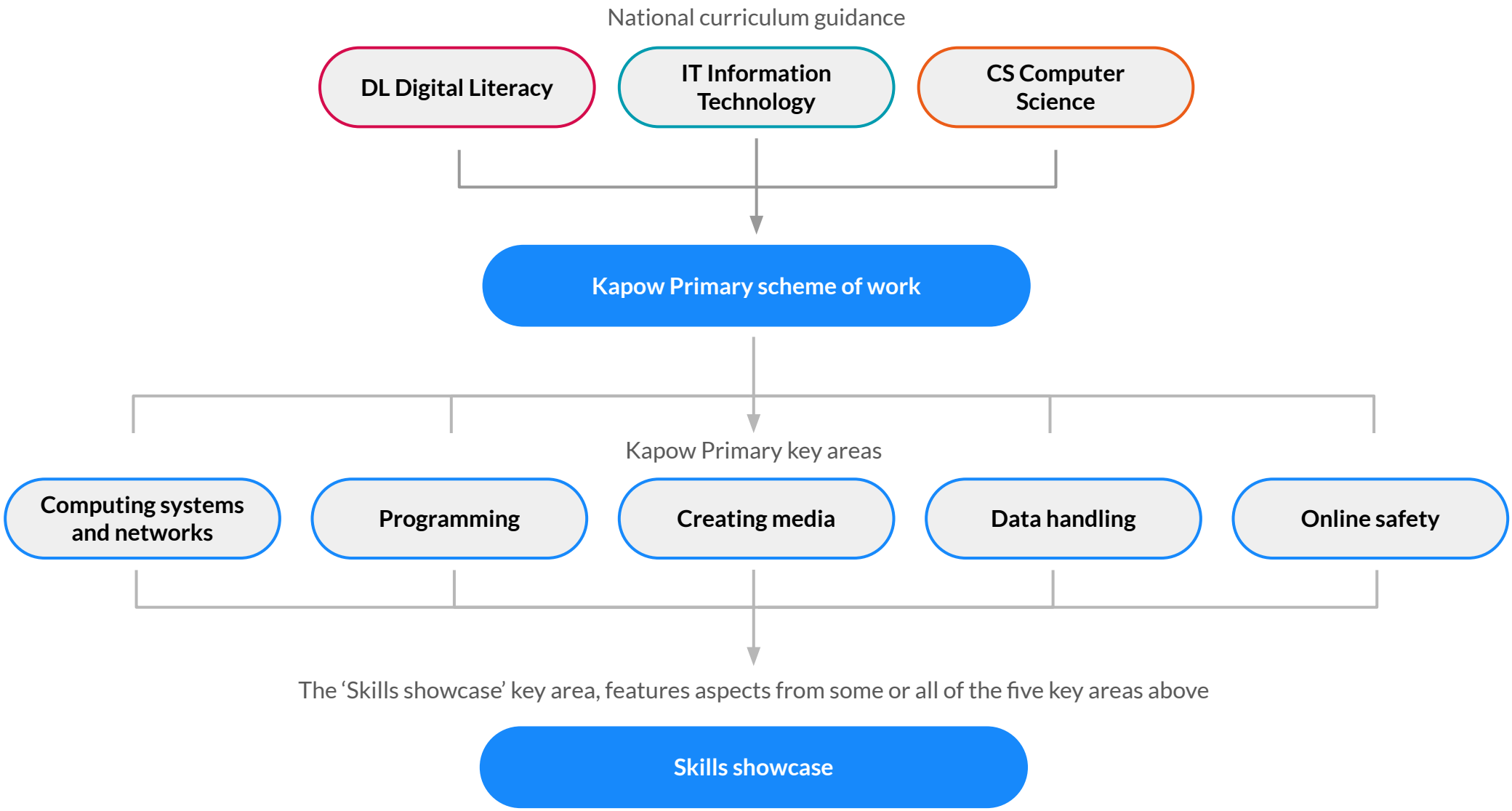
Information Technology

- ★ Are responsible, competent, confident and creative users of information and communication technology.

Digital Literacy

Our National curriculum mapping document shows which of our units cover each of the National curriculum attainment targets as well as each of the three strands. Each lesson plan references the relevant National curriculum objectives, along with cross-curricular links to any other subjects.

How is the Computing scheme of work organised?



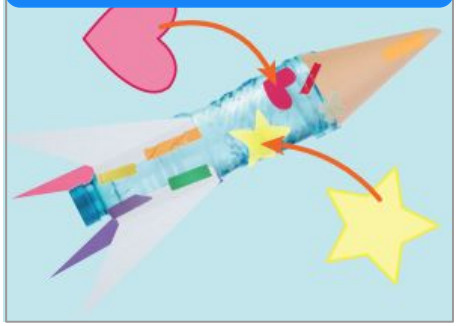
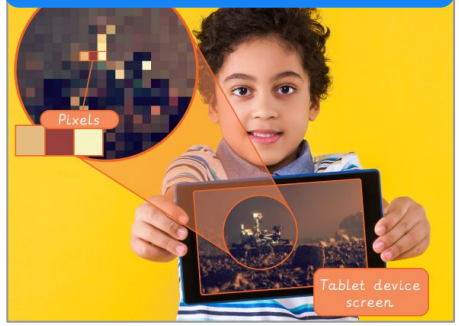
Key areas

We have categorised our lessons into the five key areas below, which we return to in each year group making it clear to see prior and future learning for your pupils and how what you are teaching fits into their wider learning journey.

Computing systems and networks	Programming	Creating media	Data handling	Online safety
Identifying hardware and using software, while exploring how computers communicate and connect to one another.	Understanding that a computer operates on algorithms, and learning how to write, adapt and debug code to instruct a computer to perform set tasks.	Learning how to use various devices — record, capture and edit content such as videos, music, pictures and photographs.	Ensuring that information is collected, recorded, stored, presented and analysed in a manner that is useful and can help to solve problems.	Understanding the benefits and risks of being online — how to remain safe, keep personal information secure and recognising when to seek help in difficult situations.

Skills showcase units

There are four units entitled Skills showcase. These units give children the chance to combine and apply skills and knowledge gained, from a range of the five key areas above, to produce a specific outcome.

Y1 - Rocket to the moon	Y4 - HTML	Y5 - Mars Rover 2	Y6 - Inventing a product
	Heading Heading 2 Heading 3 Heading 4 Heading 5 Heading 6		

Oracy in Computing

‘Oracy is the ability to speak eloquently, to articulate ideas and thoughts, to influence through talking, to collaborate with peers and to express views confidently and appropriately.

Oracy refers both to the development of speaking and listening skills, and the effective use of spoken language in teaching and learning. It is to speech what literacy is to reading and writing, and numeracy is to Maths.’

Speak for Change: Final report and recommendations from the Oracy All-Party Parliamentary Group Inquiry.

Learning *through* talk

At Kapow Primary, we believe it's crucial to provide pupils with opportunities for exploratory talk during their learning. This involves thinking aloud, questioning, discussing, and collaboratively building ideas.

Learning *to* talk

Similarly, developing oracy skills is essential for pupils to express and articulate themselves effectively across various contexts and settings, including formal ones like public speaking, debates, and interviews.

Through our Computing curriculum, pupils have opportunities to develop their oracy skills by:

- Communicating and solving problems collaboratively in groups or pairs.
- Building on the ideas of others and using discussions to plan programming projects.
- Articulating their thoughts, processes and reasoning (e.g. when debugging).
- Explaining and justifying their decisions during problem-solving tasks.
- Presenting their final outcomes to an audience, enhancing their public speaking skills.
- Evaluating the final outcomes of peers’ work.



A spiral curriculum

Kapow Primary's Computing scheme of work has been designed as a spiral curriculum with the following key principles in mind:



✓ **Cyclical**: Pupils revisit the five key areas throughout KS1 and KS2.

✓ **Increasing depth**: Each time a key area is revisited, it is covered with greater complexity.

✓ **Prior knowledge**: Upon returning to each key area, prior knowledge is utilised so pupils can build on previous foundations, rather than starting again.

Is there any flexibility in the Kapow Primary Computing scheme?

Our Computing scheme of work is organised into units.

Within each unit, lessons must be taught in order as they build upon one another.

Across a single year group, units themselves do not need to be taught in the suggested order, with the exception of the numbered units which should be taught in the correct order (e.g. **Programming 1** before **Programming 2**). We would also suggest that the **Autumn 1** unit is taught first each year where possible.

The flexibility in the order the units can be taught, allows schools to adapt the planning to suit their school and to make use of cross-curricular links available.

Assessment in Computing

Formative assessment

Every lesson begins with the 'Recap and recall' section which is intended to allow pupils retrieval practice of key knowledge relevant to the upcoming lesson. This section also provides teachers with an opportunity to make informal judgements about whether pupils have retained prior learning and are ready to move on.

Each lesson contains the 'Assessing progress and understanding' section which helps teachers to identify those pupils who are secure in their learning or working at a greater depth in each lesson. These assessments can then be recorded on our Computing: Assessment spreadsheet which supports the teacher in identifying gaps in learning amongst the class or for individual pupils.

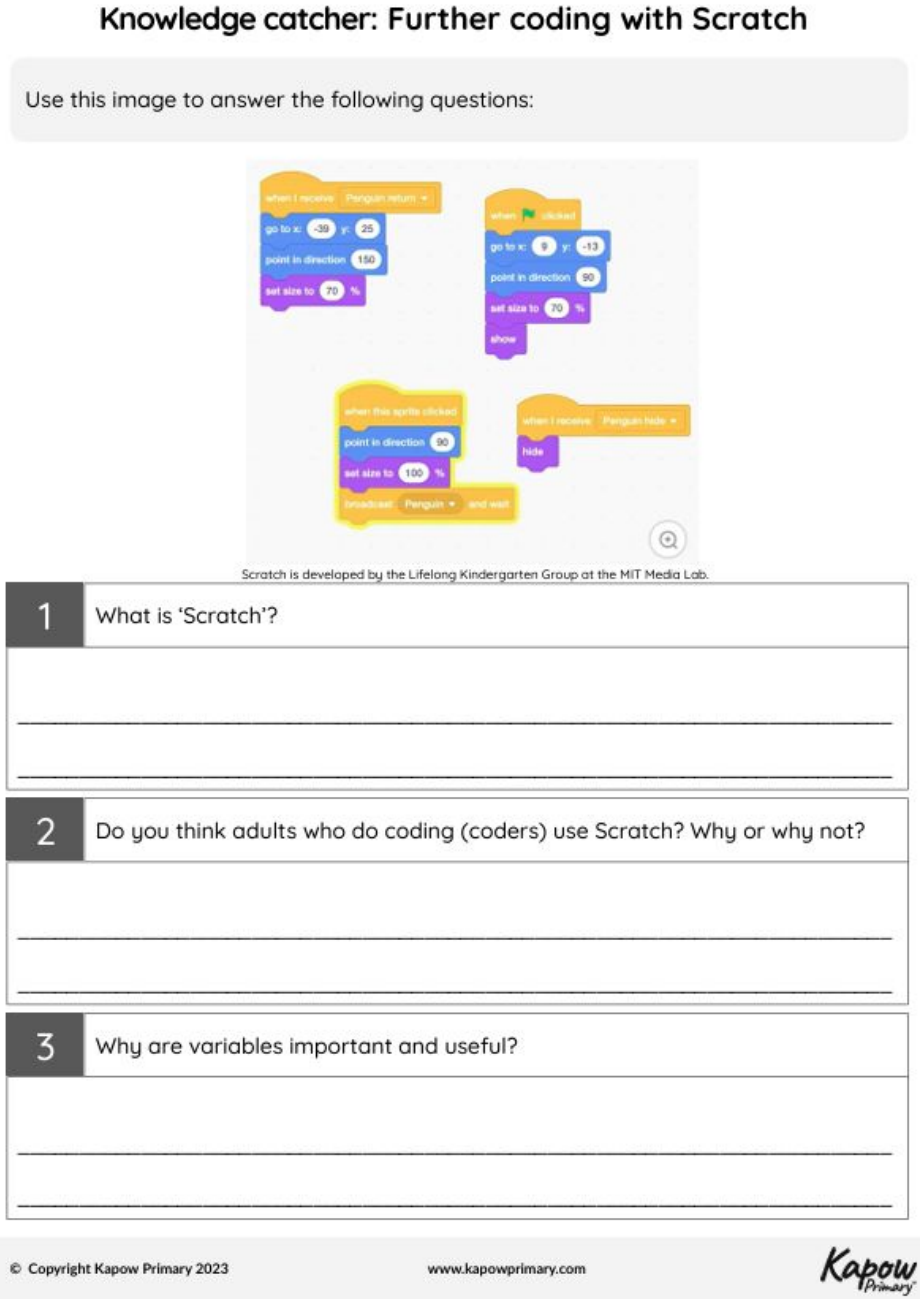
Summative assessment

Each unit of work assesses children's understanding and retention of key knowledge using an assessment quiz with multiple choice and open-ended questions.

In addition, each unit uses a knowledge catcher. This can be used at the beginning and/or end of a unit and gives children the opportunity to further demonstrate their understanding of the key concepts covered.

Assessment quizzes, and knowledge catchers provide teachers with a record of summative assessment as evidence of progression throughout the year and as pupils move between key stages.

It is suggested that teachers keep all forms of assessment as children move through primary school so that the subject lead and teachers will have a record of children's learning.



Knowledge catcher: Further coding with Scratch

Use this image to answer the following questions:

Scratch is developed by the Lifelong Kindergarten Group at the MIT Media Lab.

1 What is 'Scratch'?

2 Do you think adults who do coding (coders) use Scratch? Why or why not?

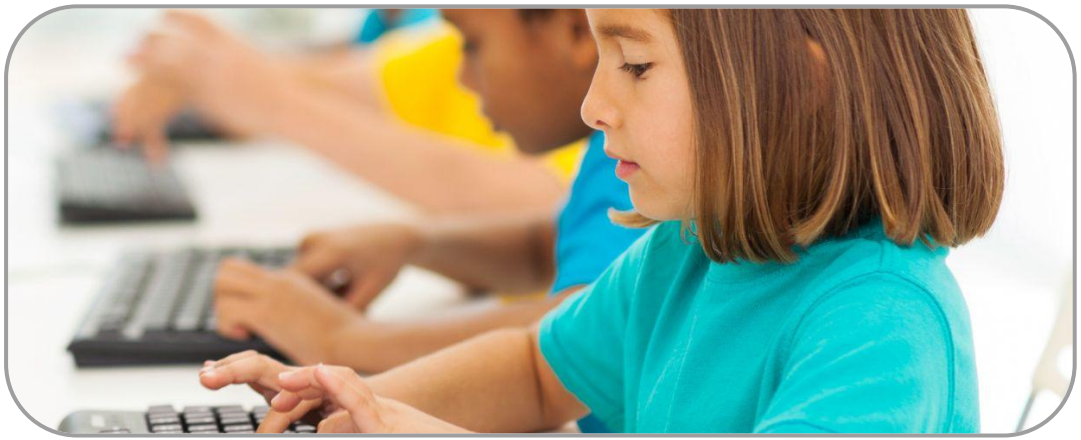
3 Why are variables important and useful?

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What about online safety?

Recognising the increasing importance of this key area, we have created an Online safety unit for each year group.

You may wish to teach this unit in the same way as the other units, on a dedicated Online Safety Day (for example, on Safer Internet Day in February each year) or spread throughout the year. See Guidance: How to fit in our Online safety units when considering the best option for your school.



Computing in EYFS

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!

Please read the teacher guidance for:

✓ Supporting a child-led project using technology

and

✓ Computing through continuous provision

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.

Our EYFS units focus on the same key areas and link to Primary and Specific Areas of the ***EYFS framework 2021*** and ***Development Matters Guidance*** as detailed on individual lesson plans and on our National curriculum mapping document.

Guidance: How to fit in our Online safety units

	Organisation	Considerations
Option 1	Teach each of our units as shown on the suggested long-term plan. Hold an online safety day at some point during the year, where children are 'off-timetable' and cover the whole of the Online safety unit on this day. Many schools may choose to do this on Safer Internet Day which falls in February each year.	• Timetabling of computing equipment on the online safety day. • What will happen if a child is away on this day? • Will pupils retain the online safety learning in their long-term memory?
Option 2	Teach each of our units as shown in the suggested Long term plan. As each half term is usually longer than the five weeks of lessons we have provided, you should have some 'spare' Computing lessons. Some or all of these could be used to teach one lesson from the Online safety unit.	• Depending on how the holidays fall, you may still have some 'spare' lessons within a half-term and some half-terms with too few lessons. • You may need to briefly recap learning from the previous online safety lesson (although this is referred to in our planning)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1 **Option 2 example:**	Improving mouse skills +Online safety Lesson 1	Algorithms unplugged +Online safety Lesson 2	Rocket to the moon + Online safety Lesson 3	Programming Bee-bots Option 1: Bee-bots Option 2: Virtual Bee-bots + Online safety Lesson 4	Digital imagery	Introduction to data

	Organisation	Considerations
Option 3	Teach the units in the order they are shown in our suggested long-term plan. When you have finished a unit move straight onto the next unit, rather than starting a new unit after each school holiday. The example below assumes six Computing lessons per term.	• Will children/ teachers be too tired to start a new unit at the end of a long half-term? • Will this have implications for termly overviews sent home to parents? • How will this affect assessment data? • Will this make it more difficult for the subject leader to monitor Computing?

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1 **Option 3 example:**	Improving mouse skills (5 lessons) Algorithms unplugged (1 lesson)	Algorithms unplugged (4 lessons) Rocket to the moon (2 lessons)	Rocket to the moon (3 lessons) Programming Bee-Bots (3 lessons)	Programming Bee-Bots (2 lessons) Digital imagery (4 lessons)	Digital imagery (1 lesson) Introduction to data (5 lessons)	Online safety Y1 (5 lessons)

Short of curriculum time?

At Kapow Primary, we understand that curriculum time is always tight in primary schools.

We have created a Condensed curriculum version of our Long term plan to help those schools who want to ensure coverage of the National Curriculum, without dedicating an hour a week to Computing.

Our Condensed curriculum long term plan abstracts units which cover key skills and knowledge in only 20 lessons.

The selected lessons ensure that there is balanced coverage of our five key areas of Computing, as well as one Skills showcase unit, to give pupils an opportunity to combine and apply skills from different units.

This version of our Long term plan could be used if you are teaching Computing in a two-week, half termly cycle or are block teaching foundation subjects. It could also be used to relieve pressure on teachers and pupils in terms of the amount of curriculum content.



Other useful documentation:

There are a number of key documents that can support you in planning and delivery of the Kapow Primary **Computing** scheme. Visit the Subject planning page for more.

✓ National curriculum coverage documents:

- Shows which of the National curriculum attainment targets are covered by each unit.

✓ Progression of skills documents:

- Shows how understanding and application of key concepts and skills builds year on year.

✓ Knowledge organisers - one per unit:

- One page overview of the key knowledge and vocabulary from a unit to support pupils' learning.

✓ Required hardware, software and equipment lists:

- Explains which software each of the commonly used devices require and other equipment needed to teach the units.

✓ Intent, Implementation, Impact statement

Suggested long-term plan: Computing - Overview (EYFS and KS1)

Years 1-6 include an Online Safety unit each. See the: Guidance: How to fit in our Online safety units for information about how to include these in your curriculum time. All units have five lessons unless otherwise stated.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Online safety
EYFS	Set up continuous provision in your classroom: Computing through continuous provision	**Computing systems and networks** Using a computer	**Programming 1** All about instructions	**Computing systems and networks** Exploring hardware	**Programming 2** Programming Bee-Bots	**Data handling** Introduction to data	
Year 1	**Computing systems and networks** Improving mouse skills	**Programming 1** Algorithms unplugged	**Skills showcase** Rocket to the moon	**Programming 2** Programming Bee-bots Option 1: Bee-Bots Option 2: Virtual Bee-bots	**Creating media** Digital imagery	**Data handling** Introduction to data	**Online safety** Online safety Y1 (5 lessons)
Year 2	**Computing systems and networks 1** What is a computer?	**Programming 1** Algorithms and debugging	**Computing systems and networks 2** Word processing	**Programming 2** Introduction to block coding Option 1: MakeCode Option 2: ScratchJr	**Creating media** Stop motion Option 1: Using tablets Option 2: Using desktops/laptops	**Data handling** International Space Station	**Online safety** Online safety Y2 (4 lessons)

Suggested long-term plan: Computing - Overview (Lower and upper KS2)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Online safety
Year 3	**Computing systems and networks 1** Networks	**Programming** Programming: Scratch	**Computing systems and networks 2** Emailing Option 1: Google Option 2: Microsoft Office 365	**Computing systems and networks 3** Journey inside a computer	**Creating media** Video trailers Option 1: Using devices other than iPads , Option 2: Using iPads	**Data handling** Comparison cards databases	**Online safety** Online safety Y3 (5 lessons)
Year 4	**Computing systems and networks** Collaborative Learning Option 1: Google Option 2: Microsoft Office 365	**Programming 1** Further coding with Scratch	**Creating media** Website design Option 1: Google Option 2: Microsoft Office 365	**Skills showcase** HTML	**Programming 2** Computational thinking	**Data handling** Investigating weather	**Online safety** Online safety Y4 (5 lessons)
Year 5	**Computing systems and networks** Search engines	**Programming 1** Programming: Music	**Data handling** Mars Rover 1	**Programming 2** Micro:bit	**Creating media** Stop motion animation Option 1: Stop motion studio Option 2: Using cameras	**Skills showcase** Mars Rover 2	**Online safety** Online safety Y5 (5 lessons)
Year 6	**Computing systems and networks** Bletchley Park and the history of computers	**Computing systems and networks** Exploring AI	**Data handling** Big data 1	**Programming** Intro to Python	**Data handling** Big data 2	**Skills showcase** Inventing a product	**Online safety** Online safety Y6 (6 lessons)

Suggested long-term plan: Computing - Outline (EYFS: Reception)

	EYFS: Reception		
Autumn 1	Set up continuous provision in your classroom: Computing through continuous provision	**Autumn 2**	**Computing systems and networks** Using a computer **(5 lessons)** Learning about the main parts of a computer and how to use the keyboard and mouse. Learning how to log in and out.
Spring 1	**Programming 1** All about instructions **(5 lessons)** The children learn to receive and give instructions and understand the importance of precise instructions.	**Spring 2**	**Computing systems and networks** Exploring hardware **(5 lessons)** Tinkering and exploring with different computer hardware and learning to operate a camera.
Summer 1	**Programming 2** Programming Bee-Bots **(5 lessons)** Children learn about directions, experiment with programming a Bee-bot/Blue-bot and tinker with hardware.	**Summer 2**	**Data handling** Introduction to data **(5 lessons)** Children sort and categorise data and are introduced to branching databases and pictograms.

Suggested long-term plan: Computing - Outline (KS1)

	Year 1		
Autumn 1	**Computing systems and networks** Improving mouse skills **(5 lessons)** Learning how to login and navigate around a computer; developing mouse skills; learning how to drag, drop, click and control a cursor to create works of art	**Autumn 2**	**Programming 1** Algorithms unplugged **(5 lessons)** Algorithms, decomposition and debugging are made relatable to familiar contexts, following directions, learning why instructions need to be specific.
Spring 1	**Skills showcase** Rocket to the moon **(5 lessons)** Developing keyboard and mouse skills through designing, building and testing. Creating a digital list of materials, using drawing software and recording data.	**Spring 2**	**Programming 2** **Programming Bee-Bots (5 lessons)** (Option 1: Bee-Bot) (Option 2: Virtual Bee-Bot) Introducing programming through the use of a Bee-Bot and exploring its functions.
Summer 1	**Creating media** Digital imagery **(5 lessons)** Taking and editing photos, searching for and adding images to a project.	**Summer 2**	**Data handling** Introduction to data **(5 lessons)** Learning what data is and the different ways it can be represented. Learning why data is useful and the ways it can be gathered and recorded.
Online safety	**Online safety** Online safety Y1 **(5 lessons)** Learning how to stay safe online and how to manage feelings and emotions when someone or something has upset us.		

Suggested long-term plan: Computing - Outline (KS1)

	Year 2		
Autumn 1	**Computing systems and networks** What is a computer? **(5 lessons)** Exploring what a computer is by identifying how inputs and outputs work and how computers are used in the wider world to design their own computerised invention.	**Autumn 2**	**Programming 1** Algorithms and debugging **(5 lessons)** Developing an understanding of; what algorithms are, how to program them and how they can be developed to be more efficient, introduction of loops.
Spring 1	**Computing systems and networks** Word processing **(5 lessons)** Developing touch typing skills, learning keyboard shortcuts and simple editing tools.	**Spring 2**	**Programming 2** Introduction to block coding **(5 lessons)** Option 1: MakeCode Exploring Microsoft MakeCode, planning and building a program. Option 2: ScratchJr Exploring what 'blocks' do' by carrying out an informative cycle of predict > test > review. Programming a familiar story and make a musical instrument.
Summer 1	**Creating media** Stop Motion **(5 lessons)** (Option 1: Using tablets) (Option 2: Using desktops/laptops) Learning how to create simple animations from storyboarding creative ideas.	**Summer 2**	**Data handling** International Space Station **(5 lessons)** Learning how data is collected, used and displayed and the scientific learning of the conditions needed for plants and humans, to survive.
Online safety	**Online safety** Online safety Y2 **(4 lessons)** Learning: how to keep information safe and private online; who we should ask before sharing things online and how to give, or deny permission online.		

Year 3

Autumn 1	**Computing systems and networks** Networks **(5 lessons)** Learning what a network and how devices communicate and share information.	**Autumn 2**	**Programming** Scratch **(5 lessons)** Exploring the programme Scratch, following the predict > test > review cycle. Learning about 'loops' and programming an animation, story and game.
Spring 1	**Computing systems and networks** **Emailing (5 lessons)** (Option 1: Google) (Option 2: Microsoft Office 365) Sending emails with attachments and understanding what cyberbullying is.	**Spring 2**	**Computing systems and networks** Journey inside a computer **(5 lessons)** Assuming the role of computer parts and creating paper versions of computers to consolidate understanding of how a computer works.
Summer 1	**Creating media** **Video trailers (5 lessons)** (Option 1: Using devices other than iPads) (Option 2: Using iPads) Developing digital video skills to create trailers, with special effects and transitions.	**Summer 2**	**Data handling** Comparison cards databases **(5 lessons)** Learning about records, fields and data and sorting and filtering data.
Online safety	**Online safety** Online safety Y3 **(5 lessons)** Learning: the difference between fact, opinion and belief; and how to deal with upsetting online content. Knowing how to protect personal information online.		

Year 4

Autumn 1	**Computing systems and networks** **Collaborative learning (5 lessons)** (Option 1: Google) (Option 2: Microsoft Office) Learning how to work collaboratively and exploring a range of collaborative tools.	**Autumn 2**	**Programming** Further coding with Scratch **(5 lessons)** Revisiting the key features and beginning to use 'variables' in code scripts.
Spring 1	**Computing systems and networks** **Website design (5 lessons)** (Option 1: Google) (Option 2: Microsoft Office 365) Learning how web pages and sites are created and how to embed media and links.	**Spring 2**	**Computing systems and networks** HTML **(5 lessons)** Learning about the markup language behind a webpage; becoming familiar with HTML tags, changing HTML and CSS code to alter images and 'remix' a live website.
Summer 1	**Creating media** Computational thinking **(5 lessons)** Solving problems effectively using the four areas of abstraction, algorithm design, decomposition and pattern recognition.	**Summer 2**	**Data handling** Investigating weather **(5 lessons)** Researching and storing data on spreadsheets and designing a weather station.
Online safety	**Online safety** Online safety Y4 **(5 lessons)** Searching for information and making a judgement about the probable accuracy; recognising adverts and pop-ups; understanding that technology can be distracting.		

Year 5

Autumn 1	**Computing systems and networks** Search engines **(5 lessons)** Learning about how page rank works and how to identify inaccurate information.	**Autumn 2**	**Programming 1** Programming: Music **(5 lessons)** Building-on programming and music skills to create different sounds, beats and melodies which are put to the test with a Battle of the Bands performance!
Spring 1	**Data handling** Mars Rover 1 **(5 lessons)** Learning about the Mars Rover, exploring how and why it transfers data including instructions, and how messages can be sent using binary code.	**Spring 2**	**Programming 2** Micro:bit **(5 lessons)** Creating algorithms and programs that are used in the real world. Using the 'predict, test and evaluate' cycle to create and debug programs with specific aims.
Summer 1	**Creating media** **Stop motion animation (5 lessons)** (Option 1: Stop_Motion Studio) (Option 2: with cameras) Creating animations, storyboard ideas and decomposing a story into small parts before putting together to create the illusion of a moving image.	**Summer 2**	**Skills showcase** Mars Rover 2 **(5 lessons)** Exploring how the Mars rover: moves, follows instructions, collects and sends data; understanding how computers work, what data is and how it is transferred.
Online safety	**Online safety** Online safety Y5 **(5 lessons)** Learning about app permissions; the positive and negative aspects of online communication; that online information is not always factual; how to deal with online bullying and managing our health and wellbeing.		

Year 6

Autumn 1	**Computing systems and networks** Bletchley Park and the history of computers **(5 lessons)** Discovering the history of Bletchley Park, historical figures and the importance of code breaking and passwords. Designing a computer of the future and creating an audio advert for their designs.	**Autumn 2**	**Computing systems and networks** Exploring AI **(5 lessons)** Exploring what AI is and how it generates text, images and code. Learning about creating and refining prompts to improve AI responses while also considering the ethical implications of AI and its potential to replace human roles.
Spring 1	**Data handling** Big data 1 **(5 lessons)** Identifying how barcodes and QR codes work. Learning how infrared waves are used for the transmission of data while recognising the uses of RFID.	**Spring 2**	**Programming** Intro to Python **(5 lessons)** Using the programming language 'Python' to create designs and art. Learning how to create loops and nested loops to make their code more efficient.
Summer 1	**Data handling** Big data 2 **(5 lessons)** Further developing understanding of how networks and the Internet are able to share information. Learning how big data can be used to design smart buildings.	**Summer 2**	**Skills showcase** Inventing a product **(5 lessons)** Designing a product, pupils: evaluate, adapt and debug code to make it suitable for their needs and designing products in CAD and creating a website and video.
Online safety	**Online safety** Online safety Y6 **(6 lessons)** Learning to deal with issues online; about the impact and consequences of sharing information online; how to develop a positive online reputation; combating and dealing with online bullying and protective passwords.		

This page shows recent updates to this document.

Date	Update
17.02.23	EYFS unit summaries added.
12.04.23	Broken links fixed.
21.06.23	Removed Google and Microsoft versions of 'Investigating weather' to reflect website content. p.13/p.18 and 'Inventing a product' p.13/p.20.
04.09.23	Updated links to reflect refreshed units on the website.
01.02.24	Updated links to reflect refreshed units on the website.
30.04.24	Updated links to reflect refreshed units on the website.
28.06.24	Updated content to reflect refreshed units on the website.
10.07.24	Added a page about oracy in Computing (p. 7).
20.08.24	Updated content to reflect refreshed units on the website.
25.09.24	Updated to add the new MakeCode unit for Year 2.
04.10.24	Updated to add in the new Exploring AI unit for Year 6.
25.10.24	Updated links.
21.11.24	Changed the wording of the Year 2 Programming 2 unit to include: Introduction to block coding.
17.12.24	Added page about assessment in Computing (p. 9).