Our Ultimate End Goal:

What will our computing students be able to do when they leave us?

By the time pupils leave Fishbourne Primary School, we aim to develop pupils who are responsible, confident and creative users of technology, who apply computational thinking beyond the Computing curriculum. They will become digitally literate and are active participants in a digital world. They will know how to stay safe whilst using technology and on the internet, minimising risk to themselves and others. It is vital that all children understand and follow our agreed E-Safety rules and know who to contact if they have concerns, including the use of report buttons. Our children will have had repeated practical experience writing computer programs in order to solve problems, including logic & algorithms. They will have the ability to ask and answer questions through collecting, analysing, evaluating and presenting data and information. Ultimately, they will have a clear understanding how digital networks work and the services they provide. This will enable them to use search options effectively whilst understanding the need to evaluate the relevance of content. The children will be respectful, responsible and competent digital citizens; they will have the knowledge to support themselves and others online.

Curriculum Coverage (NC)

What are the most basic requirements from the National Curriculum?

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Connected to relevant early learning goals Understanding technology Technology E-Safety Self-confidence and self-awareness Managing feelings and behaviour Digital literacy Exploring and using media and materials Being imaginative Programming Understanding Moving and Handling	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 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 programmes	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 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 programmes	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact 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 technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact 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 technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact 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 technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact 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 technology purposefully to create, organise, store, manipulate and retrieve digital content Recognise common uses of information technology beyond school	Use technology purposefully to create, organise, store, manipulate and retrieve digital content Recognise common uses of information technology beyond school	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 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 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 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

Our computing curriculum is split into four different strands. Together they make the entire computing curriculum but refer to different parts of computational understanding. These are:

Computer Science Theory and Online Safety – Teaching and learning about how important it is to stay safe online and the thinking behind computing.

Programming– Is the study of processes that a computer may do. This includes data, algorithms, coding and programming.

Information Technology – using a range of physical technology and devices

Digital Literacy – understanding how computers and technology work. This includes school networks and the internet.

PROCEDURAL KNOWLEDGE - What skills do we want our computing students to have? Analyse, evaluate and solve problems
How will these skills build on what went before and help prepare our children for what is coming next?

Computer Science Theory and Online Safety   *Programming*   *Information Technology*   *Digital Literacy*

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Hold and use a mouse correctly	As the previous year and:	As the previous year and:	As the previous year and:	As the previous year and:	As the previous year and:	As the previous year and:
Discuss the use of everyday technology such as TVs, phones etc	Discuss and explore how to use technology safely and carefully.	Use a list of trusted, pre-visited websites to search the internet effectively and safely. Use this skill to research a given topic	Use search engines effectively and safely	Use search engines effectively and safely	Use the internet/search tools effectively and safely with support from adults and begin to understand the importance of using/reproducing the information	Use the internet/search tools effectively and safely without support from adults and begin to understand the importance of using/reproducing the information
Save work to a designated place	Log on to a PC using their log-in details, save a document and then shut down safely	Use 'WORD' or a similar programme to write a story. Add pictures and borders.	Understand how to keep information private and how to report concerns.	To use blogging and email confidently to communicate and support learning.		
Click and drag on PC, iPad and smartboard	Use 'WORD' to write simple sentences and choose different fonts and colours	Record using digital cameras or recorders to suit a given intention	Import and export text from a range of sources.	Make and edit a short film using appropriate media packages adding sound or voice.	To enhance learning in and out of school by choosing the appropriate technology (email, seesaw etc...)	To use a range of devices (handheld and not) to extend learning, understanding and competency of ICT skills in the real world.
Use keyboard to type short, simple words			Change the font, colour and letter casing and make corrections.			
Order and sequence events and give instructions	Use a digital paint programme to draw, reshape and recolour pictures. Add labels to pictures or photographs.	Sequence instructions to control a rover	Use the spellchecker and dictionary accurately.	To combine photographs and text using an appropriate programme		
			Use find and replace text within text.	To test and debug programmes/or sets of instructions.	Use email and attach documents to communicate	To communicate with friends online safely using a variety of media.
Record and playback a video/photo and sounds	Create a simple set of instructions to make something happen	Write a set of instructions for a programme (Scratch, Kodu etc...)	To sort data and produce a graph.	Use simple programming software to create a simple game using	Create a presentation incorporating text, images and sounds for an identified audience.	To create a webpage with hyperlinks and embedded videos.
Use technology to draw a picture, add text and animate it		Open saved documents from their school folder				

	Use a range of media (internet, CD-ROMs, DVDs etc) to find information about a given topic		Use commands to build a complex of instructions to control devices on screen. Confidently save work and retrieve files from a range of places on networks. Begin to use blogging, seesaw and email to communicate and support learning.	extensive knowledge of algorithms. To combine complex sequences of instructions. Understand how the school network, search engines, the internet and passwords work	Create a presentation with pictures and text including slide transitions and hyperlinks Create a document that is fit for purpose, using a range of publishing tools. Including making mind-maps with images Use commands to build complex sequences of instructions. Use sequences of instructions to control devices. Describe at least one decision made in an algorithm Explain your 'code' that controls a device Interpret and interrogate information. Explore virtual maps	Create a document that is fit for purpose, using a range of publishing tools to suit a specific task. Combine text and graphics for effect to suit a purpose. To use sequences of instructions to write a series of code to suit a purpose such as a game. Control devices and on-screen games by writing sequences of instructions. Code devices to carry out a specific task. Use formulae in a spreadsheet and interpret and interrogate information. Create films, including sound effects, music, transitions and special effects. Save productions to an external media such as a hard-drive, USB or CD.

PROPOSITIONAL KNOWLEDGE - What key concepts or knowledge will our computing students have?
What knowledge do we want to emphasise? How will knowledge be built on what went before and prepare our children for what is coming next?

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Have a basic understanding of online safety	As the previous year and:	As the previous year and:	As the previous year and:	As the previous year and:	As the previous year and:	As the previous year and:
Know the parts of a PC and what they do	Learn on a basic level what the internet is/can do.	Know how to safely use the internet to research a project	Understand how to use the internet, in particular social media sites safely.	Understand how the school network works and to understand strong and weak passwords.	Understand how and why the internet can be used to find information.	Understand how social media works and how to stay safe whilst using it.
Understand how to use PC mouse and keyboard	Understand that the internet can be dangerous and that they need to stay safe on the internet.	Understand how to use the internet, specifically social media sites, safely.	Understand how to use search engines safely.	Generate, develop, organise and present work using ICT.	Understand how to create and use online accounts safely.	Understand viruses and download/upload, focusing on safety.
Know how to take a picture/film digitally	Understand how to log-in, save a document and shut down a PC safely	Understand how to choose a computer programme to suit a purpose.	To create a simple presentation on a topic, including animations and sounds.	Understand how to choose an appropriate programme to create 2d and 3d design.	Understand why websites, games and other media have age restrictions.	Understand and use terms related to the internet such as WWW, URL and ISP
Open and close PC programmes e.g. word, powerpoint... and save work.	Find and use 'WORD' to write short sentences	Use a PC and other devices with increasing confidence	Choose a programme to create documents that are fit for purpose.	Increased understanding of how to use instructions in a sequence.	Understand how to use word, powerpoint, excel and emails to a high standard.	Understand how to create an email account safely with help from adults.
	Use simple instructions (move forward, left, right, back) to code	Understand how to find bugs in a programme and suggest ways to fix a problem	Use appropriate programmes such as, paint, 2simple and digital devices to record pictures, diagrams, melodies and sound files to suit a purpose.	Understanding of how to find bugs in a set of instructions.	To use an appropriate programme to carry out a challenge or solve a problem	Understand how to create a webpage with hyperlinks
	Learn that an algorithm is a set of instructions	Understand how to predict outcomes of an algorithm and suggest possible problems (bugs)	Understand how to build a complex series of instructions.		Save and load procedures (instructions) to a computer.	To explain exactly what each part of a code does within the sequence.
			Understand how to use instructions to control devices		Understand different ways to find and debug code	To apply debugging skills to ensure the code works.

What key vocabulary will our computing students need? Vocabulary is important because it embodies and communicates concepts.						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing technology digital online safety programme instruction	All from previous year plus: document safety instructions algorithm internet media	All from previous year plus: bugs debugging device Social Media project recording sequence design	All from previous year plus: search engine blogging communication e-mail password data network animation copy & paste	All from previous year plus: 2d 3d generate publish software media evaluation	All from previous year plus: coding restrictions information virtual interpret interrogate hyperlinks transitions hardware	All from previous year plus: URL WWW ISP download upload viruses hard-drive USB formulae handheld

What experiences do we want our computing students to have had? What opportunities will our geographers have had to *make the world a better place*?						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Safer computing day Parent/Carer workshops for using technology and staying safe online	Safer computing day Parent/Carer workshops for using technology and staying safe online	Safer computing day Visit from a game designer, (Portsmouth and Chichester University, SEGA are all useful for this).	Safer computing day Publishing their creations (videos) online. This may be videos on the school website. Junior STEM Lego robotics workshop in school	Safer computing day Coding and robotics workshop in school from Lego	Safer computing day Take part in a STEM fair	Safer computing day Take part in a STEM fair

An example of a Learning experience for each year group. These have been designed to fit into two weeks of learning. These are only suggested steps and may be adapted to suit your class, resources and environment.

Our plan, as a school, is to teach all computing lessons through using Lego. This link https://education.lego.com/en-us takes you to the website where you will be able to download curriculum packs and resources to supplement your learning experience. All of the computers and ipads will also have the Lego wedo software to code the Lego robots. For EYFS and year 1, there are some fantastic free resources too.

Useful links:

https://raisingrobots.com
https://education.lego.com/en-us

EYFS
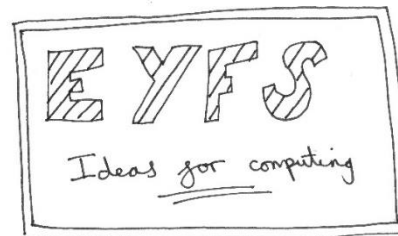
Step 1: How?

Give the children a collection of pre-made models. Allow children to talk about how it was made.

Ask: What steps did the maker have to take?

Discuss: A step by step, non-ambiguous process to achieve a goal is called an algorithm.

Give the instructions and let them see.

Step 2: What?

Give the children instructions for a simple vehicle design. Allow them to follow the instructions in pairs.

Ask: What happens if I miss a step? If I miss a step, how can I fix it? (Debugging).

Step 3: Hour of code.

Opportunity to teach the use of a PC. Log on, find 'hour of code' online, play KS1 Algorithm games, take a screen shot, log off. Add screen shot to books.

Step 4: Create

Use your instructions to build your own design. Think about each small step carefully.

Year 1
Understanding Algorithms

End goal: To write a set of instructions to make a lego vehicle.

Computing end goal: Take pictures of your completed lego vehicle and add them to your writing

Hook ideas ⇒ Organise
(use instructions)⇒ Lego play
⇒ K-nex, lego, duplo play

Step 5: Make!!

Use your step by-step plan to build your own vehicle. Look for and fix any bugs in the instructions.

Step 6: Publish!

Take "professional" photos of your vehicle and add them to your writing.

Steps continued...
⇒ Visit LEGOLAND?
⇒ Organise

Resources...
⇒ LEGO Education Wheels sets x2
⇒ Squared paper
⇒ Digital Camera/iPad

Step 1: Algorithms

Recap what an algorithm is.

Ask the children to follow a chosen algorithm card from the LEGO WEDO 2.0 set.
Discuss: What happens is a step is missed?

what if a step is changed?

Step 2: Debugging/Bugs

Change a step on an algorithm card (or a set of instructions). This could be baking a cake, steps to draw a house etc...

Ask... How can we fix the code (debugging) once it is found? Suggest solutions to a broken code.

Step 3: Writing code

Choose a task for your Rover (made in step 1).
Begin to experiment with code, debugging as they go.
Give a simple goal for the children to achieve.

Step 4: Apply code

Write your own code to enable your Rover to achieve a simple task.

Year 2

Coding Kings

End goals: Explain how computer code enables a robot/Rover to do a simple task. (Written in WORD and copied to ppt.).

Computing end goal: To code a Rover to do a simple task (sort items, move through a course etc...)

Hook ideas → Grab machine
→ Robot visit   → Pick out a code challenge
→ Find the issue

↓ Why isn't it working?

Step 5: Fix (Debug) Code and apply to Rover.

Take knowledge of suggesting bug fixes and apply fixes to own code. If it works perfectly, what could be improved or what could change next time?

Step 6: Publish

Use multi-media (cameras, videos etc...) to explain what your Rover does. Add video to a PowerPoint with your written end goal.

(Code does not need to be perfect. Children must be able to explain why.)

Steps continued...

⇒ Visit to robot Lab at Uni.

⇒ Visit LEGOLAND, PAULTONS PARK (AMAZING ROBOT WORKSHOPS).
⇒ Visit from a game designer (SEGA).

Resources...
⇒ LEGO Wedo 2.0 sets ×15
⇒ Algorithm cards to follow (1:2)
⇒ PCs (Powerpoint)
⇒ Cameras, videos etc...

Step 1: Why?

Research why it may be useful for robotics to be used in some situations. Create a powerpoint on one of the benefits.

Step 2: Explore

Develop ideas. What can your arm be used for? Why will it help in society?

This is a nice stage for the children to realise the benefits.

Step 3: Writing code

Use LEGO Coding app. on ipads to write the code for your arm.

Think about the layers of code needed to programme the arm and the base.

Step 4: Create

Create your robotic arm and leaf sample. Apply your code to the samples. Work with your partner to improve and debug.

Year 3

End Goals: Write to NASA or European Space Agency. Offer the services of your new robotic arm.

Computing End Goals: Programme a robotic arm to sense a plant leaf.

Hook ideas ➡ Robotics workshop by LEGO.

➡ NASA's robotic arm of the Mars Rover

Step 5: Collaborate

Did everybody end up with a working arm? If not, why? Collect data, using a mix of approaches, explaining what could be done to fix this.

Step 6: Share!

Test the robotic arm on your leaf sample. Debug if needed.

Share videos and code on school website

Steps continued...

⇒ Contact robotics department at unis.
⇒ Factory lines (Rolls-Royce)

Resources...

⇒ LEGO Wedo 2.0 ×15
⇒ PC
⇒ iPad

Step 1: Setting the scene

Explain the areas of computational thinking that the children will be using.
- ⇒ Algorithms
- ⇒ Coding + programming
- ⇒ Debugging

Recap all of this vocabulary

Step 2: Why?

Discuss your end goal. Will the children choose individual dances, dances to music, collaborative dances? Begin to build ideas.

Step 3: Mind mapping collaboratively

Use the purpose from step 3 to now break the class into interest groups.
- ⇒ Individuals.
- ⇒ Small groups.

Mind map ideas together.

Year 4

End Goals: Write an invitation to the school to watch your robot dancing assembly.

Computing End Goals: To programme and create a dancing robot.

Hook ideas ➡ Dance routines?
➡ class disco?

Step 4: Choose your idea

Develop 2/3 ideas for your robotic dance. Why are you choosing this?

Step 5: Make your idea and apply code

Make your idea come to life. Apply your written code and match to a piece of music.

Step 6: Tinkering and perform

Debug or improve code to improve dance moves. Collaborate with others to choreograph a routine?

Film dance to music.

Steps continued...
- ⇒ Dance workshop
- ⇒ Collaborative dancing robots.

Resources...
- ⇒ Pupil worksheets from LEGO
- ⇒ LEGO Wedo 2.0 x15
- ⇒

Step 1: Explore

Discover issues that have come through weak building design. What happens to buildings in an Earthquake?

Step 2: Research

Think about the variables of the building (Height, width, base).

What makes the biggest difference?

Step 3: Computational thinking

Use Sketch up to design first design of building. Use LEGO to build your building.

Use your knowledge of structure

Step 4: Build the simulator and building

Use LEGO wedo 2.0 to build your simulator (use instructions included).

Step 5: Programming

Programme your simulator using LEGO coding. Think how you can increase/decrease the earthquakes force.

Step 6: Test and publish

Put your building through its paces. Use multi-media/slow motion video to film.

Steps continued...

⇒ Visit STEM fair
⇒ Architect visit

Resources...

⇒ LEGO Wedo 2.0 × 15 sets
⇒ LEGO Bricks (Basic)
⇒ Paper, tape, Pasta + Marshmallows
⇒ Sketch up programme

Year 5

Robust Structures

End Goals: Advertise your new, ground-breaking, market altering technology.

Computing End Goals: Build a LEGO structure able to withstand an earthquake.

Hook ideas ➡ Using paper, tape, pasta, marshmallows or LEGO, build the tallest or strongest building.
⇒ Spinnaker Tower falling video.

Link: Angry Earth (Geography)

Use seesaw to document work throughout experience and print out pdf. at the end.

°o Thought?

Step 1: Inspiration

Why and where are robots used to help with everyday life?

Famous robots and their roles...

Be inspired to design something new!

Step 2: Research

What is needed? Is there something in our day-to-day lives that needs help?
Think of ideas and possible solutions...
- Help waking up?
- Help to be reminded?

Step 3: Choose and plan
Computational thinking

What do you want your robot to do?

Choose a hack for your robot.
Plan what it looks like
Plan its code and think of potential issues.

Step 4: Write code and programme

Use LEGO code writer to write your code for your Robot.
Is it effective?

Step 5: Create and code

Build your robot and apply the code/programming that you have written
- Debug
- Analyse

Step 6: Publish

Choose a way to advertise your product using multi-media.
- film an advert and publish online?
- Take professional photos...?

Steps continued...

⇒ Robotics workshop by LEGO
⇒ Visit a STEM fair

Resources...

LEGO Wedo 2.0 sets x 15
Pupil worksheets

Year 6

How to train your Robot!

End Goals: Advertise your life-hack as a product to potential clients.

Computing End Goals: Create a robot to help with a daily task. (Alarm clock, chores, reminders etc...).
Hook ideas ⟶ Robots (machines) that help with daily life.

Books Link ⟶ Tin (Padraig Kenny)

The Wild Robot (Peter Brown)

	Suggestions of how computing can enhance other areas of the curriculum. These are a collection of ideas that can be added to over the years.					
Writing and Reading	Maths	Science	History	Geography	PE	Art
Green Screen – film the children in a setting of your choice

Audio books – there are many websites which allow free listening of books

Video calls to authors/people of interest via the school Sype and webcam

Countdown

Pobble

Once upon a picture | TT Rockstars

Maths Bot

Countdown

https://teachinglondoncomputing.org/interdisciplinary-computational-thinking/computer-science-and-maths/ | Youtube/Vimeo video links (Watch carefully)

Hubble space telescope

NASA

European Space Agency | Green screen – go back in time

Horrible histories

Video call a historian | Google Earth | Videos of sport coaching

Analyse performance with slow-motion videos | Virtual gallery tours – visit the Louvre, The Vatican or Tate gallery |

DT	French		Music	PSHCE	RE	Other
Algorithms – a set of instructions to make something work			Garage Band	Digital citizenship links	Google Earth – visit famous religious sites	Padlet

Useful programmes and apps and what they do.
Seesaw – an online resource sharing programme
Tapestry – an online resource sharing programme
Kodu – Coding programme by Miscrosoft
Sketch up – a programme for design
www.hourofcode.org
Lego wedo - https://education.lego.com/en-gb/product/wedo
Raspberry Pi - app builder
www.Knex.com
Minecraft - programme for coding
https://www.barefootcomputing.org - offer computational thinking workshops
https://codeclub.org/en/start-a-code-club - Weekly coding club
https://www.stem.org.uk/primary-computing-resources - great resources for teaching all computing
Bitzbox/Khan Academy - coding apps

Knowledge Organisers

These are a useful tool for adults and children. They can help to focus learning and to discuss different vocabulary. These knowledge organisers are split into year 1&2, 3&4 and 5&6. The colour coding remains the same for the 4 areas of computing.

Computing Knowledge Organiser
Computer Science - Programming: Years 1/2

Programming Vocabulary

Algorithm — The steps needed to do a task, written in order (e.g. 'Press the button to eat the food.').

Debugging — Finding and correcting mistakes (bugs) in code.

Event — Code that runs when something happens, such as a button being clicked.

Execute — Run code on a computer precisely to make a program.

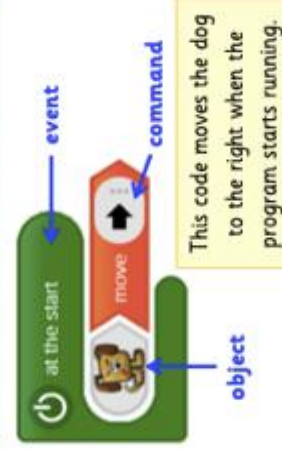**Object** — An item on screen, such as an image, a button or some text.

Testing — Checking if a program works how it should.

Floor Robots

You can **control** how a floor robot moves by giving it a **sequence** of **commands** to follow.

Move up.

Turn left.

GO

Turn right.

Move down.
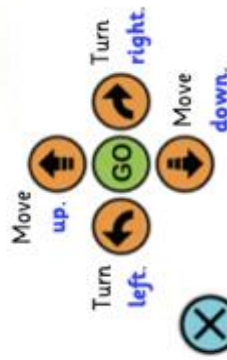
Press the **clear** button to reset it for another go.

Check the commands and **predict** the route it will follow before pressing 'go'.

Coding a Program

at the start — **event**

move — **command**

object

This code moves the dog to the right when the program starts running.

A **click event** will trigger an action when an object is clicked on.

✔ Use **logical reasoning** to predict the behaviour of a program before you run it.

Designing a Program

The **user interface** is the graphics the user sees and interacts with.

Add objects.

background colour

Paint the scene.

buttons to press

player to control

Computing Knowledge Organiser Information Technology: Years 1/2
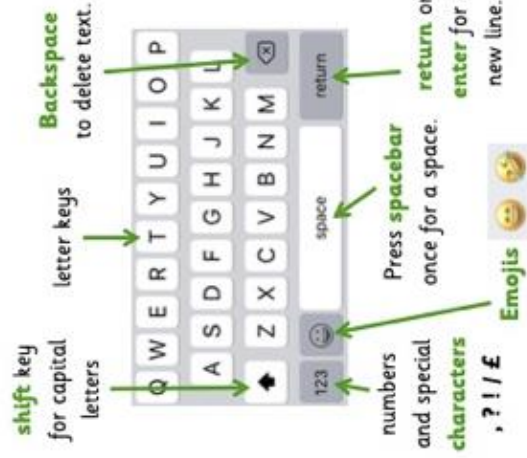
Word Processors

Lets you type text and insert images onto a page to make a **document**.

Sunday trip

It was a hot, sunny day so I went to th|

Change the text: size, colour and **font style** so it looks nice.

Flashing cursor shows where to type.

Auto-wrap puts text on a new line automatically when you get to the edge of the page.

Parts of a Keyboard

Backspace to delete text.

return or **enter** for a new line.

shift key for capital letters

letter keys

Press **spacebar** once for a space.

Emojis

numbers and special **characters** , ? ! / £

Shooting Digital Photos

1. Hold the camera steady with two hands.
2. Point and **focus** it on the subject.
3. Press the **capture button.**
4. Check the photo looks okay and re-take if needed. Delete photos you don't like.

✓ Ask **permission** before taking photos of other people.

portrait

landscape

Creating E-Books

Electronic books combine **multimedia** content like: text, pictures, sound recordings, shapes and video clips.

Photos

Camera

Pen

Add Text

Add Sound

✓ Press the **undo** icon to get rid of your last action.

Painting tools let you drag different tools around the screen to draw pictures.

Computing Knowledge Organiser
Digital Literacy: Years 1/2

Internet Search Engines

A search engine lets you find websites on the Internet.

Google ⓑ Bing

Ask yahoo!

search bar

images

filter

search results

1. Website title
2. Website title
3. Website title
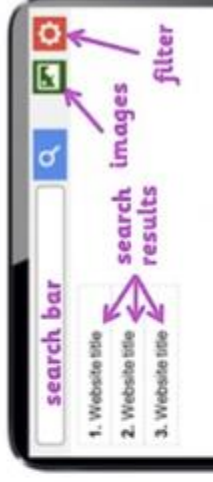
✓ Search using key words and spell them correctly!

Using a Web Browser

A web browser lets you view websites on the Internet.

address bar

Refresh or reload the page.

tabs

history

back button

You can navigate a website using:

- a menu of buttons or icons;
- an index of pages listed in alphabetical order;
- a key word search.

A B C D E F

Roots   Search

Asking for Help

If you are feeling: worried, scared or sad when online, ask a grown-up you trust for help or support.

a teacher or teaching assistant

your parents

CEOP REPORT
ceop.police.uk

ChildLine
0800 1111

Keeping Safe Online

✓ Talk kindly online so you stay friends.
✓ Only message friends so strangers don't contact you.
✓ Visit sites for children so you keep safe and have fun.
✓ Tap links carefully so you don't buy things by mistake.
✓ Take breaks regularly so your eyes get rest and your body gets exercise.

Computing Knowledge Organiser
Computer Science - Theory: Years 1/2

Input Devices

Let you put information into a computer.

Keyboard to type letters in.

Mouse to move and click on items.

Lens to take photos.

Microphone to put sound in.

GPS sensor to tell a computer where it is.

Output Devices

Let you get information out of a computer.

Headphones to let you listen to sounds.

Monitor screen to display graphics for you to see.

Printer to put computer work onto paper.

Light to show if a computer is on or off.

Vibration motor to make a device shake.

Technology Uses at Home

Games console
Interact with it to play games.

Smart speaker
Use your voice to give it instructions.

Washing machine
Program it to clean clothes.

Digital clock
Uses radio signals to show the right time.

Microwave
Press buttons to tell it how to heat food.

Television
Use the remote to control what it shows.

Supermarkets and Airports

At a supermarket, customers use computers to:
- weigh food on **scales**;
- scan **barcodes** on items;
- pay at a **checkout**.

At an airport, travellers use computers to:
- **check-in** their luggage;
- go through **security scanning**;
- look up their flight departure gate on a **monitor screen**;
- **scan their ticket** before boarding a plane.

Computing Knowledge Organiser
Information Technology: Years 3/4

Features of a Neat Document

Make the title in big, fancy lettering and **align** it to the centre.

Arrange items **symmetrically**.

Emphasise key words and subheadings using: **bold**, *italic* and underline.

Add **speech bubble shapes** for extra facts.

Dolphins

Dolphins are a type of mammal that mostly live in oceans and can grow up to four metres long.

Appearance
They have blue-grey skin, a long nose, two flippers and a large tail to help them swim.

Diet
Dolphins hunt for food near the surface of the water and eat fish and squid.

Did you know they can live up to 25 years?

✓ Use a nice colour scheme that matches the topic.

✓ Use the spelling and grammar checkers to correct any mistakes.

Manipulating Text

Changing Text

To **insert a word**, put the cursor in the middle of a sentence, then type.

It was a day.

Double-click/tap to highlight a word, then **overtype** to change it.

I went to the zoo.

Use **find and replace** to quickly change a word used a lot.

Find
Replace

Moving and Copying Text

Cut
Paste
Drag-and-drop to a new place.

Cut and paste to a new place.

Copy
Paste
Copy and paste to duplicate.

Video Editing

Plan a **storyboard** of your movie first so you know what media to collect and capture for it.

Trim and adjust their duration.

Insert and arrange videos on a **timeline**.

Type on **text**.
Title
Caption
Credits

Add a **soundtrack** to suggest a tone (e.g. upbeat, scary).

Put **transitions** between clips.

Record a **voiceover** narration.

Apply **pan** and **zoom** effects to create motion and highlight things.

Photo Editing

You can change the appearance of an image to **highlight something in it** or to suggest a **mood/feeling** (e.g. coldness, magical, happiness).

Apply **filters** or effects to change the colours.

Add a **border** or frame so it looks neat.

Blur parts so your eyes focus on the main subject.

Crop lets you cut out parts you don't want.

Remove **blemishes** like dust or dirt.

Adjust the **brightness** and **contrast** so it is lighter or darker.

Computing Knowledge Organiser
Digital Literacy: Years 3/4

Interpreting URLs

- Each website has a **Uniform Resource Locator** or address.
- You can type a URL into a web browser to go directly to a website.

World Wide Web
This is a website.

www.**bbc**.**co**.**uk**

Domain Type
The owner is... **.com** **.co** a company.
.sch a school.
.nhs a hospital.
.police the police.
.gov the government.
.museum a museum.

Domain Name
This website is called...

Country Code
It is located in... **.uk** the United Kingdom.
.je Jersey. **.fr** France.
.it Italy. **.au** Australia.
.de Germany.

Age Restrictions

- These limit the age of people using **a website, app or game** and stop people joining if they are too young.
- If you pretend to be older, you are lying, breaking their **terms and conditions** and could **access dangerous or upsetting content**.
- Child-friendly services are often **moderated** by an adult overseeing everyone's behaviour, so are safer.

If you have concerns about content or contacts online, **ask an adult you trust for help or support** as soon as possible.

under 13s

a teacher or teaching assistant

your parents

CEOP REPORT ceop.police.uk

ChildLine 0800 1111

Finding Helpful Search Results

Title *Does the title look useful?*

Author *Is the author trustworthy?*

Summary *Does the content seem relevant?*

Kids *Is the website aimed at children?*

Comparing Online Behaviours

✓ Acceptable	✗ Unacceptable
Be kind, polite and show respect to others.	Be a cyber-bully: unkind several times on purpose.
Use a complex, strong password like R3dsh1rt.	Use a weak, easy-to-guess password.
Keep your login details secret to stop hackers getting access.	Use the same password for everything and tell others what it is.
Play online games fairly and use nice language.	Cheat in games and send nasty messages.
Get permission before sharing photos of others.	Share somebody's photo without checking so they get upset or are put at risk of harm.

Computing Knowledge Organiser
Computer Science - Theory: Years 3/4

The Structure of the Internet

The Internet is an <u>international network</u> of computers connected together.

Data travels along **fibre-optic cables**.

Websites are stored on **servers**.

86.152.49.13

I.P. addresses identify each location to send data between.

broadband exchange

Routers send out **WiFi** Internet signals so data can be **downloaded** onto computers.

An **Internet Service Provider** lets you connect to the Internet.

How a Search Engine Works

Search engines **crawl** or scan websites and **index** summaries of them on their servers.

When you search, they quickly scan this index for **matching words**.

Search results are **ranked** into an order by:

- how **relevant** they are;
- how **popular** they are;
- which **language** they are in;
- if they have paid to be a **sponsored link** at the top;
- your **search history**.

Computer Systems

- **Hardware** is all the physical electronic components of a computer.
- **Software** is the programs which run on a computer, like a word processor or a game.

input → processing → output

Control systems monitor the environment and make a computer react.

You control a **thermostat** so the heating knows at what temperature to turn itself on and off.

A **burglar alarm** will sound if it has been turned on and senses somebody moving around.

Robots, Drones and Simulations

Robots
These are programmed to carry out repetitive tasks **quickly** and **accurately**, **without getting tired**.

car factory robots
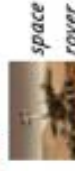
space rover

Drones
These are **small** and **cheap** remote-controlled machines, with cameras on, that are **easy to fly**.

film making

parcel delivery

Simulations
These try to mimic real-life events and let you **safely** explore what happens when you make choices.

driving simulator

virtual pet

Computing Knowledge Organiser
Computer Science - Programming: Years 3/4

On-Screen Turtle Programming

A floor robot can be simulated on a computer using a screen turtle, programmed using similar commands.

Set its start position.

Set the pen colour.

repeat event

angle to turn

distance to move

Triangle

90°
72°
60°
45°

Writing Algorithms

- An **algorithm** is a set of instructions to do a task, written in everyday language, in order.
- A **flowchart** shows how these steps are linked together in a sequence.
- A computer program precisely follows (**executes**) the steps of an algorithm.

Flowchart
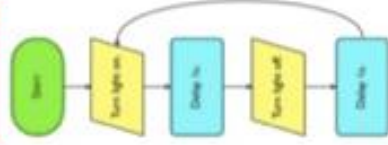
Algorithm

1. Switch the crossing light on.
2. Wait 1 second.
3. Switch the crossing light off.
4. Wait 1 second.
5. Go back to the first step.

Variables

Programs store **data that can change** (or vary) in a variable, like a score counter or a timer.

Variable

If the pirate gets the coin, then move the coin to a new place and add 10 points to the score.

If the pirate touches the snake, **then** reset the score to zero and stop the game.

Conditional Events (Selection)

Selection is a way of making a program automatically choose to run some code when a **specific condition is met.**

If _____ happens, then run this code: _____

If the rabbit touches the brown fence, then stop it.

If 30 seconds have passed, then show a baddy.
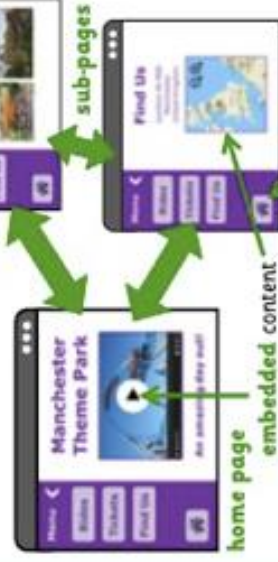
Computing Knowledge Organiser
Information Technology: Years 5/6

Creating a Website

A website is made up of several pages about a topic, navigated in a non-linear order in a web browser.

Coded in HTML or made in a web design package.

sub-pages

hyperlink button

home page

embedded content

Purposes
persuade inform entertain

✓ A consistent design and an appropriate colour scheme used across the site.

(website mock-up: Manchester Theme Park, Rides, Find Us)

Creating a Presentation

A presentation is made up of several slides about a topic, usually played in a linear order on a screen.

✓ **Colour scheme** matches the topic.

✓ A neat, consistent **design** used across all slides.

✓ **Transitions** added between slides.

✓ **Objects animate** in and out for effect.

✓ **Bullet points** summarise key facts.

Audiences
children parents visitors

Databases

A database is a structured way of organising data on a topic so it can be searched and analysed easily.

A **field** is a single item of data.

A **record** is all of the information stored about something.

Sort records into alphabetical or numerical order.

Filter to only show records matching rules (e.g. Rainfall ≥ 5mm).

Weather	Temperature (°C)	Rainfall (mm)
Rainy	13	5
Sunny	20	1
Sunny	23	0
Cloudy	11	2
Rainy	9	9
Sunny	20	0

Uses
- Sports coaches studying player statistics.
- Schools checking pupil attendance.
- Supermarkets monitoring stock levels.

Spreadsheets

A spreadsheet lets you **present data** neatly and **solve calculations** quickly to find out **statistics**.

column B

table

formula

row 6

function

cell D11

(spreadsheet: Supermarket Shop — Item, Price, Quantity, Cost; Total Cost, Cash Given, Change Due)

Uses
- Finding totals of a lot of numbers.
- Working out budgets.
- Doing maths conversions.

Computing Knowledge Organiser
Digital Literacy: Years 5/6

Tips for Effective Web Searching

- Use key words. e.g. capital city France
- Use inverted commas to find exact names. e.g. "Queen Elizabeth II" "Chinese New Year"
- Cross-reference (compare) websites to check the information on them is reliable.
- Put information into your own words to avoid plagiarism (copying somebody else's work and pretending it's yours).

Comparing Search Engines

Google Bing Ask yahoo!

- Which has the nicest design?
- Which includes fact boxes in the results?
- Which has the fewest adverts?
- Which shows you the most useful results?

Personal Information and Privacy

Personal information is details that can identify you, such as your: full name, home address, bank card number, email address or photograph.

You might give your **consent** to share some online, such as: when shopping, when sending a selfie to a friend or to authorise your account when logging in.

Are the person's **privacy settings** public (visible to everybody) or private (only visible to selected people)?

Digital Footprint — A record of you and your activities online, that somebody could search. Is the website trustworthy and likely to keep your details secure from hackers?

Phishing Message — A message pretending to be from a trustworthy company that is actually fake and trying to steal your details.

E-Commerce and Vlogging

E-Commerce

amazon TESCO

- Always get the bill payer's permission before checking out.
- Only shop on trusted sites so you aren't a victim of fraud.
- Be aware that cookies track which pages you visit so shops may send you targeted adverts or change their prices.

Vlogging

- Stream over WiFi as it's faster and cheaper than using mobile data.
- Make your own, original content so you aren't breaking copyright laws.
- Block and report cyberbullies.
- Be aware that viral videos might be fake.

Online Manipulation Tactics

Threats When someone says something bad will happen if you don't do what they say.

Flattery When someone says really, really nice things about you to gain your affection.

Bribery When someone offers you something in return for doing something.

Too-Good-to-be-True Offers When you are offered something seemingly impossible.

Computing Knowledge Organiser
Computer Science - Theory: Years 5/6

Internet Services

The Internet is useful because it lets **people communicate** and **share information** across the world **quickly** and **easily.**

Social Media

Message friends, share photos and find followers.

Communication

Send messages to people and collaborate on ideas.

World Wide Web

View pages of multimedia information about different topics.

Broadcasting

Stream videos, listen to radio stations and watch programmes on catch-up.

(Internet Services diagram)

Computing Pioneers

Charles Babbage made the first machine which could perform mathematical calculations in 1832.

Tommy Flowers designed Colossus, the first programmable electronic computer, in 1943.

Tim Berners-Lee was the inventor of the World Wide Web in 1989.

Larry Page was the founder of Google search engine in 1995.

Steve Jobs was the founder of Apple in 1976, launching the iPhone in 2007.

Future Technology

Homes are becoming smarter with appliances running automatically and able to be controlled from apps over **WiFi.**

More devices are having **Bluetooth** capabilities enabled, allowing them to connect with each other remotely, such as to transfer files or offer hands-free services.

The **digital divide** is when some people can't benefit from using technology because they:

- are **too poor** to buy a computer;
- live in an area with a **slow Internet connection;**
- live in a country where some **websites are blocked.**

The Impact of Technology

√ Advantages	✗ Disadvantages
Online shops let you buy things from home easily.	Real shops have been forced to close.
Robots do tasks quickly and don't get bored.	This has meant some workers have lost jobs.
Information is stored on computers so few trees are cut down for paper.	More electricity is needed which could be bad for the environment.
Cloud computing lets people work anywhere.	Worries about hackers and lack of socialising.
Children have fun playing computer games.	Too much screen time causes sleep problems.

Computing Knowledge Organiser
Computer Science - Programming: Years 5/6

The Systems Lifecycle

This explains how a computing project is **developed in stages** to meet specific needs or expectations.

① Analysis
Who will it be for?
What has to be done?

② Design
How should it be done?
What could it look like?

③ Implementation
Create the project as efficiently as possible.

④ Testing
Does it do what it should?
Does it need modifying?

⑤ Evaluation
Review the project's success.
How could it be improved further?

Random Numbers

Set the speed of a UFO by **chance**, within the range of 1-10.

If the rocket catches the UFO, **then** move its position, using **co-ordinates**, to the top of the screen, to a random position in the middle.

X-axis 480
Y-axis 480   Each square 32 x 32

Decomposition Breaking down into parts.
Abstraction Removing unnecessary detail.

Flowcharts of Control Systems

Control systems constantly monitor **sensors** (input devices detecting changes in: light, temperature, movement etc.) and, using **conditional events**, decide when to respond by triggering **actuators** (output devices like: bulbs, motors, buzzers etc.).

❄ **Freezer** ❄

💡 **Street Lamp** 💡
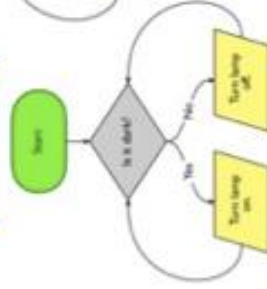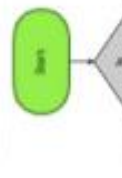
Programming with Numbers

Set the exact speed a ship moves at.

Turn a ship by changing its **angle** (direction it faces) and **heading** (direction it moves in).

-ve   +ve
left   right

Logical Reasoning Solving a problem carefully.
Tinkering Changing things to see what happens.
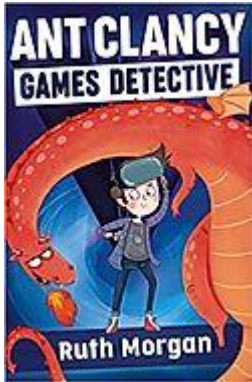
## Ant Clancy: Games Detective

Ruth Morgan

Designed to appeal to children with a love of gaming, Ant Clancy: Games Detective is a fast-paced adventure story that could be enjoyed by any reader who likes an action-packed mystery story. Ant is the only person in Westford Abbey who can't get into playing Ray-Chay, the new virtual reality game that everyone else is obsessed with. Soon something goes very wrong with the game, which somehow spills over into real life, and Ant is the person who will get to the bottom of what's happening and try to put things right. As the story unfolds, the line between the gaming world and reality is blurred even further in the race to uncover the truth.
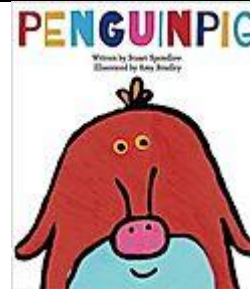
PENGUINPIG

Stuart Spendlow & Amy Bradley

Written by a teacher, PENGUINPIG is designed to teach the concept of e-safety to young children and is a great choice of book for EYFS and KS1. The story features a little girl who becomes intrigued by a penguinpig that she encounters online. When she takes the decision to go out and meet the penguinpig for herself, she finds that things are not always as they seem on the internet and that from now on she must think before she clicks.
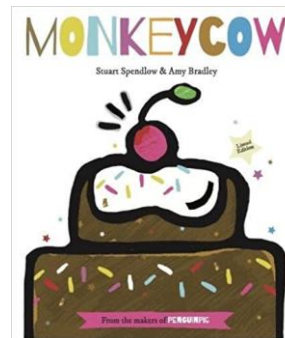
From the creators of number one best-selling PENGUINPIG comes MONKEYCOW (Limited Edition)! When a little girl creates the most delicious chocolate cake imaginable for the summer fair, she hides it in a top-secret underground base with a password for the door. Filled with delight, she makes her way around the town spreading the news and sharing the password with some locals. However, little does she know the disaster that is soon to strike…

Level Up
Tom Nicoll & Anjan Sarkar

Flo loves gaming but gets more than she bargains for when she meddles with one of her mum's technological inventions and finds herself sucked into a video game. Can she use all of her gaming know-how to get herself and her friend Max out in one piece? A great choice of illustrated chapter book that will appeal to reluctant readers in KS2.
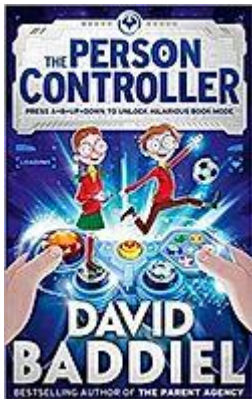
The Person Controller
David Baddiel & Jim Field

Fred and Ellie are twins who love video games. One day a Mystery Man sends the twins a mysterious-looking video game controller that gives them control of real-life people. Witty and fast-paced, David Baddiel spins a winner of a story for gaming fans.
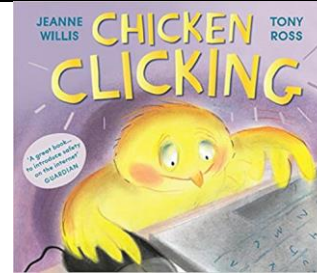
One night Chick hops onto the farmer's house and has a browse on his computer - CLICK - soon she's shopping online for the whole farm! But when she arranges to meet up with a friend she's made online, she discovers all is not as it seems...
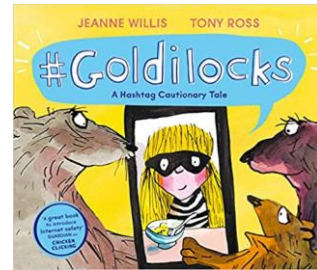
Everyone loves Goldilocks' hilarious online videos, but in her quest to get more likes, more laughs and more hits, she tries something a little more daring: stealing porridge #pipinghot, breaking chairs #fun, and using someone else's bed #sleep. What will Daddy Bear do when he sees that online?

In the Key of Code
Aimee Lucido

Suitable for Upper KS2/Lower KS3, this is a verse novel about an American girl called Emmy who tries to figure out the ups and downs of life while balancing her two separate passions; coding and music. As the book progresses, Emmy's two worlds begin to interweave, showing how notes, beats and rhythms overlap with code, language and algorithms.
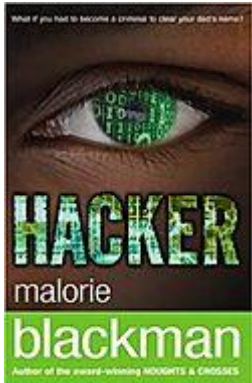
Hacker

Malorie Blackman

A cyber-crime thriller from the former Children's Laureate Malorie Blackman. Vicky's father is sent to jail for stealing a large sum of money from the bank and she sets about to prove that he is innocent. Using her brilliant computer skills, Vicky decides to hack into the bank computer files to find evidence of the truth about the real thief.

Also features on:
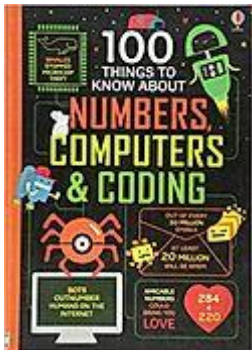
100 Things to Know About Numbers, Computers & Coding

Various

Shortlisted for the Royal Society Young People's Book Prize 2019, this is a bright and colourful non-fiction text about computers and coding. 100 fascinating facts are appealingly presented via infographic-style illustrations, short text boxes and

diagrams. This is the kind of non-fiction text that children like to choose to read and read again.
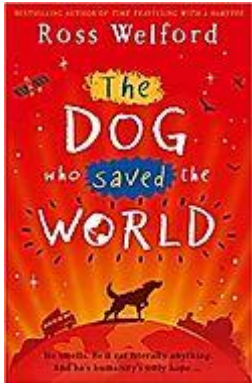
The Dog Who Saved the World

Ross Welford

Georgie Santos loves dogs more than anything in the world. Soon, Georgie is no longer allowed to see her beloved pet Mr Mash after he becomes sick with a deadly and highly contagious disease that threatens the life of every dog in the country. The only thing distracting Georgie from the pain of not being able to see Mr Mash is her new friendship with Dr Pretorius, an eccentric old scientist who is developing a curious virtual reality project inside a domed room. As time goes on and the deadly disease becomes even more serious, Georgie begins to wonder whether Dr Pretorius might hold the key to changing the future and, together with her beloved Mr Mash, embarks on a hair-raising virtual adventure to save the world.
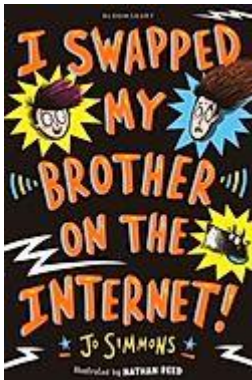
I Swapped My Brother On The Internet

Jo Simmons & Nathan Reed

I laugh-out-loud chapter book that will appeal to anyone who has ever wished they could upgrade their sibling for a better model. Johnny is fed up of being picked on by older brother Ted, so when he stumbles across a website called SiblingSwap.com, he turns to the internet to solve his problems. What follows is a hilarious series of not-quite-perfect alternative siblings. There is also an accompanying activity pack available to go with this book.
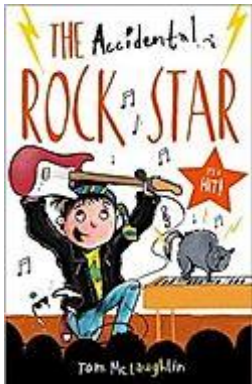
The Accidental Rock Star

Tom McLaughlin

A laugh-a-minute story about overnight internet success. Ollie and Hector dream of being rock stars, but unfortunately they have very little musical talent. One day, as they are making their own music video in Ollie's room, a twist of fate shoots them to overnight success online. Before they know it, they become the biggest stars in the world - even though it was actually Ollie's pet cat Nigel who is responsible for their music going viral.

Why Are There Different Computer Languages?

Kirsty Holmes
Part of the 'Computers and Coding' non-fiction series designed for ages 5-9, this visually appealing information text looks at the difference between computer languages including Scratch, HTML and Python. You may also like the other books in this recommended series too, such as How Computers Work ([available here](#)), Staying Safe Online ([available here](#)) and What is Coding? ([available here](#)).

The Stig Plays a Dangerous Game
Jon Claydon & Tim Lawler
This Top Gear spin-off is a fast-paced action story featuring cars, computer games, an evil billionaire, racing tournaments and of course, The Stig. The appeal will be obvious to some readers, but even readers with no experience of Top Gear can quickly become absorbed in this page-turning adventure full of twists and turns. Sam Wheeler is new to his town, and nobody else seems to notice the strange goings-on there because adults and children alike are addicted to a mysterious new computer game called Xenon. Together with his new friends Mini Cooper and Ford Harrison, Sam begins to investigate the strange happenings and save his town from disaster.
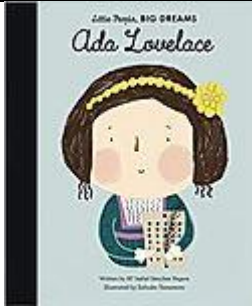
Ada Lovelace (Little People, Big Dreams)

Sanchez Vegara, Maria Isabel & Zafouko Yamamoto

Ada Lovelace was one of the world's first computer programmers. Growing up in a time when girls were not encouraged to pursue maths or science, Ada combined her passion for STEM and her big imagination to dream the world's first computer program. This illustrated picture book retells Ada's inspirational life and includes extra facts and a biographical timeline with historical images.
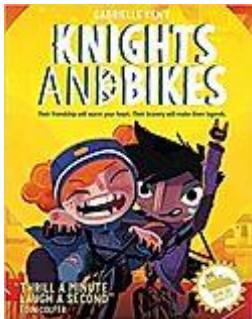
Knights and Bikes

Gabrielle Kent & Rex Crowle

Knights and Bikes is based on a computer game of the same name. It tells the story of two girls who undertake an exciting adventure on the island of Penfurzy. Demelza expects nothing exciting to happen on the island, until she meets a like-minded friend called Nessa and the pair dream up an adventure together. The quirky story is fast-paced and filled with action and the right amount of humour.

Glitch

Sarah Graley

A graphic novel suitable for upper KS2 about a girl able to enter into the world of her new video game. Girl-gamer Izzy tries to juggle family, friendships and school in her real life with the virtual world of her new game, in which she is destined to save Dungeon City from the Big Boss.
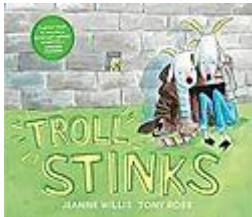
## Troll Stinks!

Jeanne Willis & Tony Ross

This is a great choice of book for exploring the topic of e-safety and cyberbullying with young children. Billy the Goat and his friend Cyril are playing with a phone when they decide to send mean messages to the troll living under the bridge. Soon the two friends discover that their online actions have had a big impact on troll's feelings and that their messages were not such a fun idea after all. For more on online safety, you may also like Chicken Clicking (available here) and #Goldilocks (available here) by the same authors.
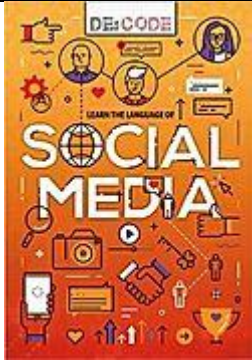
Learn the Language of Social Media

William Anthony

A stylishly designed colourful glossary of words relating to social media. Organized alphabetically, the book explains a range of terms from bitmojis and boomerangs to memes and moderators, all in an informative and accessible way. Whether you are a netiquette nerd or you don't know your YOLO from your YouTube, this a great guide to have to hand and for pupils in KS2.
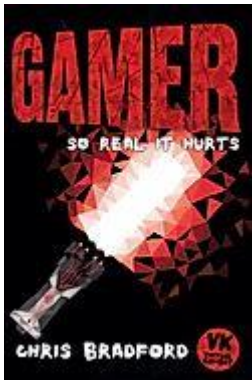
Virtual Kombat: Gamer

Chris Bradford & Anders Frang

Street kid Scott jumps at the chance to be a Virtual Kombat gamer. If he can battle his way up the ranks, the ultimate prize will be his. But then his friend Kate goes missing in the battle arena, and Scott's dream turns into a nightmare.

Glossary

algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve an objective.

bugs – a mistake or problem within a set of code

computer networks – the computers and the connecting hardware (wifi access points, cables, fibres, switches and routers) that make it possible to transfer data using an agreed method ('protocol').

computational thinking – the thinking before the computer does the job itself

control – using computers to move or otherwise change 'physical' systems. The computer can be hidden inside the system or connected to it.

data – a structured set of numbers, representing digitised text, images, sound or video, which can be processed or transmitted by a computer.

debug – to detect and correct the errors in a computer program.

digital content – any media created, edited or viewed on a computer, such as text (including the hypertext of a web page), images, sound, video (including animation), or virtual environments, and combinations of these (i.e. multimedia).

information – the meaning or interpretation given to a set of data by its users, or which results from data being processed.

input – data provided to a computer system, such as via a keyboard, mouse, microphone, camera or physical sensors.

internet – the global collection of computer networks and their connections, all using shared protocols (TCP/IP) to communicate.

logical reasoning – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules.

output – the information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly though the control of motors in physical systems.

program – a stored set of instructions encoded in a language understood by the computer that does some form of computation, processing input and/ or stored data to generate output.

repetition – a programming construct in which one or more instructions are repeated, perhaps a certain number of times, until a condition is satisfied or until the program is stopped.

search – to identify data that satisfies one or more conditions, such as web pages containing supplied keywords, or files on a computer with certain properties.

selection – a programming construct in which the instructions that are executed are determined by whether a particular condition is met.

sequence – to place programming instructions in order, with each executed one after the other.

services – programs running on computers, typically those connected to the internet, which provide functionality in response to requests; for example, to transmit a web page, deliver an email or allow a text, voice or video conversation.

simulation – using a computer to model the state and behaviour of real-world (or imaginary) systems, including physical and social systems; an integral part of most computer games.

software – computer programs, including both application software (such as office programs, web browsers, media editors and games) and the computer operating system. The term also applies to 'apps' running on mobile devices and to web- based services.
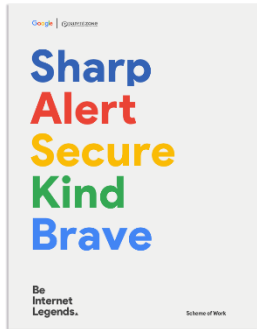
variables – a way in which computer programs can store, retrieve or change simple data, such as a score, the time left, or the user's name.

World Wide Web – a service provided by computers connected to the internet (web servers), in which pages of hypertext (web pages) are transmitted to users; the pages typically include links to other web pages and may be generated by programs automatically.

Online Safety

To mark the beginning of each computing learning experience, one lesson or day (minimum) should be dedicated to online safety. We are using 'be internet legends' by google to inform our teaching of online safety. The link below will take you to the website. In each class there is a copy of the online safety toolkit but you can also download this online.

https://beinternetlegends.withgoogle.com/en_uk/toolkit

Useful internet safety resources:

https://www.childnet.com/resources/smartie-the-penguin

https://www.saferinternet.org.uk/advice-centre/young-people/resources-3-11s

https://www.internetmatters.org/schools-esafety/primary/