

Computing is described in three strands in the **National Curriculum Programme of Study**:

Computer Science	Digital Literacy	Information Technology
Computational thinking, solving problems, sequences and writing programs	Online safety, solving problems by using technology	Understanding how information is used and shaped

The Computer Science Strand is about using computational thinking to solve problems and make things for a purpose. It generally, but not always, involves writing programs. The programming language used will be appropriate for its domain, for example programming for a website will involve HTML. You can also use computational thinking to solve many worthwhile problems by creating a sequence of instructions for the context of the problem, which are not programming instructions. For example, a branching story in episodes can be thought of in this way, where one episode is a single instance in a sequence of episodes, and providing a choice of routes allows a user to make a selection.

The Digital Literacy Strand is in two parts. One of these is about the safe and responsible use of technology. The other is about solving problems and making useful things by the use of digital tools, such as spreadsheets, video editing applications and so on. Computational thinking is essential to working in this strand as well as in the Computer Science strand, because it is a powerful problem solving process.

The Information Technology Strand is in two parts. One of these is that pupils should know how it all works; how information of all kinds becomes accessible to and manipulable by technology. The core idea is that of digitisation and its consequences. This is about creating a deep understanding of information. Students of computing need to understand how texts, sounds and images become accessible to technology so that they can be shaped.

<https://www.naace.co.uk/curriculum/>

Early Years Foundation Stage (EYFS) Curriculum

Some students working in the Orange Pathway Curriculum will not yet be working at National Curriculum Year 1 Expectations and will be focusing on Early Learning Goals within a multi-sensory, communication and interaction enriched Early Years Curriculum. Technology is one of the Early Learning Goals in the key area of Understanding the World. Some students will be working towards achieving the developmental learning skills within this and other key areas of learning. This Computing Curriculum Overview has therefore been structured within the National Curriculum Programme of Study Strands but with targets taken from the EYFS Learning Pathway small step foundation skills.

Orange Pathway

Computer Science	Computing Programme of Study (ELGs & KS1)	All pupils will...	Most pupils will...	Some pupils will...
	<p>Early Learning Goals 22-36 Mths: Seeks to acquire basic skills in turning on and operating some ICT equipment. Operates mechanical toys, e.g. turns the knob on a wind-up toy or pulls back on a friction car.</p> <p>30-50 Mths: Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. Shows an interest in technological toys with knobs or pulleys.</p> <p>40-60 Mths: Completes a simple program on a computer.</p> <hr/> <p>KS1 Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions Create and debug simple programs</p> <p>Use logical reasoning to predict the behaviour of simple programs</p> <hr/> <p>KS2: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web</p> <p>Appreciate how [search] results are selected and ranked.</p>	<ul style="list-style-type: none"> • Interact purposefully with cause and effect actions on toy or screen • Swipe left, right, up and down on a tablet screen to navigate • Look for on/off buttons on toys • Switch TV, iPad or other toy or device on and off • Explore a friction car and understand that you have to pull it back to move it forward • Activate mechanical toys using switches, buttons, knobs and keys • Use more than one switch simultaneously and alternately • Wind up a 'wind up' toy • Interact purposefully with cause and effect actions of toys • Associate clicking an IWB pen or mouse with cause and effect • Independently instruct a programmable toy • Wait to manipulate computer or tablet controls when progress bar or hour glass is signalling that computer or tablet is completing a task 	<ul style="list-style-type: none"> • Understand that everything we do in real-life, unplugged situations involves a sequence of steps to achieve a desired outcome • Understand the relationship of cause and effect. To anticipate and think about what might happen as a result of an action when choosing a song, completing a game on the iPad/ IWB. • Understand that algorithms are sets of instructions • Explore devices that can be controlled by single and multiple sets of instructions • Create simple programs on a device or in an activity that does not rely on text • Understand that computers need precise instructions and that computers have no intelligence and can do nothing unless a program is executed. • Recognise and can use a range of input and output devices. 	<ul style="list-style-type: none"> • Understand that sets of instructions are needed to achieve a desired outcome • Sequence a set of instructions to control a process. • Use commands to move a physical device from one place to another. • Know that computers collect data from various input devices, including sensors, etc • Understand the difference between hardware and application software. • Understand why and when computers are used and shows an awareness of tasks best completed by humans or computers. • Sequence a set of instructions to control an onscreen device to achieve a desired outcome. • Modify actions in sequences of events (algorithms) to achieve a goal (debugging).

Resources

Schemes of Work (accessed via <https://www.risingstars-uk.com/login> or via T:\AAA School

Documents\PLANNING\SPECIALIST SUBJECT PLANNING\COMPUTING\Computing SCHEMES OF WORK)

Switched on Computing (Programming and Computational Thinking Focus)

EYFS Activity 16 We can Count

EYFS Activity 5 We can Drive

EYFS Activity 7 We can Exercise

EYFS Activity 17 We are Designers

We are Treasure Hunters

1.2 We are TV Chefs

2.1 We are Astronauts

2.2 We are Games Testers

Greenwich

Year 1f Understanding Instructions and making things happen

Year 2d Controlling a Floor Turtle

Newham

Year 1&2 Giving Instructions

Equals

2.2a Learning to control things

2.2b Creating scenes

3.2a Controlling devices

3.2b Designing and exploring environments

(S) 2a Noticing things happen

(S) 2b Beginning to make things happen with switches

(S) 2c Beginning to make things happen with the computer

Physical Resources

- **BeeBots/BlueBots** (with or without BlueBot App)
- **WeDo Lego Sets and Other Lego sets** (*controlling, coding, following instructions, problem solving, debugging, decomposition, predicting, recognising patterns, etc*)
 - Lego Education Steam Park and Coding Express

Mobile Floor Projector

Sound Beam

Barefoot Computing <https://www.barefootcomputing.org/primary-computing-resources>

- Dance Move Algorithms (Algorithms)
- Head, Shoulders, Knees and Toes (Algorithms)
- Lego Building Algorithm (Algorithms)
- Musical Sequences (Algorithms)
- River Crossing (Logical Thinking)
- Scratch Jr Knock Knock Joke (Algorithms)
- BeeBot Basics (Algorithms)
- Sharing Sweets (Algorithms)
- World Map Logic (Predicting)
- BeeBot Route (Decomposition)
- Getting Ready for School (Decomposition)
- KS1 Decomposition (Decomposition)
- Creating Patterns (Patterns)
- House Patterns (Patterns)
- Patterns Unplugged (Patterns)

Books

- **Linda Liukas** - Hello Ruby: Adventures in Coding
- **Miles Kelly** - Algorithms and Coding

iPad Apps

- Hopscotch
- Daisy the Dinosaur
- Blue Bot and Bee Bot
- A.L.E.X
- Blox 3D Junior, Blox 3D City, Blox 3D World
- Dexteria (fine motor skills)
- Slide & Spin (fine motor skills)
- Sound Box (cause & effect)
- Toonia Jelly (cause & effect)
- Chooselt Maker
- Paint Studio (animation)
- Following Directions (following instructions)
- Fluidity (cause & effect)
- Atomic Toy (cause & effect)
- Sand Garden (cause & effect)
- Fun Bubbles (cause & effect)
- Balloon Popper
- Fireworks (cause & effect)
- Tocca Cars (driving, directions)
- Bus Driver (driving, directions)
- Traffic Lights (instructions, if... then)
- Busy Things – Busy Bundle and Cat & Dog Stories)iSequences
- Making Sequences
- Clicker Connect, Sentences, Books (writing a sequence of actions/instructions to solve a real life problem (making a smoothie, sandwich, crossing the road, constructing a model, etc)
- Airport HD Lite (simulation game),
- My PlayHome /School/Shop (simulation and interaction with real life environments)

Online Resources

- **Education City** Computing KS1 and KS2 www.educationcity.com
 - KS1 Crane Game Predict Simple Algorithms
 - KS1 Everyday Algorithms Unplugged
 - KS1 Sea Drive Identifying Correct Programs
 - KS1 Sea Drive Executing Programs
 - KS1 Sea Drive Extending Identifying Correct Programs
 - KS2 Code Crunch Lesson – Using Repeat
 - KS2 Do the Logomotion – Matching Code to Shapes
 - KS2 Robo Task – Correcting Algorithms
 - KS2 To Boldly Logo
- **LGFL**
 - **Busy Things** <https://www.busythings.co.uk/lgfl-login/>
 - Tutorial 1&2 Coding The Basics
 - Loops
 - Loopy
 - Dancing 1&2
 - Conditionals
 - Puddles
 - Events
 - Collect Stars 1, 2 & 3
 - Variables
 - Challenge Dance Steps 1&2
 - Project Call and Response
 - Path Peril
 - **Just 2 Easy (J2Code)**
 - **JIT5 J2E Infant Tool Suite (Animation)**
 - **BBC Bitesize (Computer Science)** <https://www.bbc.com/bitesize/subjects/zyhbwmn>
 - What is an Algorithm?
 - What is Code?
 - What are Computer Bugs?
 - How do you Program a Robot?
 - How do Computer Games Work?

Orange Pathway

	Computing Programme of Study (ELGs & KS1)	All pupils will...	Most pupils will...	Some pupils will...
Digital Literacy	<p>Early Learning Goals</p> <p>30-50 Mths: Shows and interest in real objects such as cameras or mobile phones.</p> <p>ELG: Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.</p> <hr/> <p>KS1: recognise common uses of information technology beyond school</p> <p>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.</p> <hr/> <p>KS2: Understand the opportunities [networks] offer for communication and collaboration</p> <p>Be discerning in evaluating digital content</p> <p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</p>	<ul style="list-style-type: none"> • Know that a TV, Computer and Monitor or other powered/electronic devices need to be switched on • Know that CD or DVD needs to be inserted • Know how to operate a growing range of IT equipment in their environment for a particular purpose • Complete a simple program activity on the computer • Know that equipment needs power source or batteries • Begin to use different types of technology for a particular purpose • Operate a remote control • Operate a computer mouse • Operate and Interacting with IWB • Open and operate applications using an electronic tablet <hr/> <ul style="list-style-type: none"> • Understand that people interact with computers. • Explore different ways of interacting with computers and other devices • Recognise how technology is used to control and organise people, places and things in everyday life (supermarkets ,lifts, traffic light systems, airports, kitchen equipment, televisions, etc.) • Recognise and use a range of input and output devices. • Recognise and label themselves in individual and group photos or acknowledge own name • Share and take turns with appropriate behaviours • Express likes, dislikes, preferences and communicative intent • Be aware of peers and recognition of self • Understand families and groups to which they belong 	<ul style="list-style-type: none"> • Recognise that a range of digital devices can be considered a computer. • Navigate the web and can use simple key words to carry out simple web searches to collect digital content. • Use the Internet to find things out • Select a device or program that will best perform a particular task and achieve a desired outcome. • Select, combine and use internet services. • Select a favourite You Tube video, select a favourite music track and operate a DVD player to go forward, back or repeat a section • Understand who to tell when encounters content that upsets or worries them when online or in real life • Know what is personal information (name, address, birthday, etc.) • Know who can and can't be trusted to share personal information • Know to keep personal information private • Understand acceptable behaviour, i.e. be polite, common courtesy and basic manners in daily class interaction no bad or abusive language or other inappropriate behaviour • Understand class online safety rules drawn up and agreed upon by the whole class. 	<ul style="list-style-type: none"> • Understand how to sort and categorise and how this helps to find things through questioning or searching (to understand how search engines work) • Recognise some ways in which the Internet can be used to communicate • Use a voice activated home control device purposefully to control their environment • Purposefully use electronic methods of communication including composing and sending an email to known people • Understand the importance of communicating safely and respectfully online • Know how passwords are important to protect information and devices • Understand the differences between real life and screen items, people, etc. • Know that other people's identity online can be different to their identity in real life • Understand how photographs can be manipulated and how people can pretend to be someone/something else • Know that some people can be unkind both online as in real life • Be aware that others may have different basic needs, viewpoints and opinions and that people may behave in certain ways for different reasons • Know who to tell if worried or upset.

Resources

Digital Literacy

Schemes of Work (accessed via <https://www.risingstars-uk.com/login> or via T:\AAA School Documents\PLANNING\SPECIALIST SUBJECT PLANNING\COMPUTING\Computing SCHEMES OF WORK)

Switched on Computing (Computer Networks and Communication and Collaboration Focus)

- 1.4 We are Collectors
- 1.5 We are Storytellers
- 2.4 We are Researchers
- 2.5 We are Detectives

Switched On Computing Online Safety

Key Stage 1

- 1.1 We are Rule Writers
- 1.2 1.2 We are Kind and Thoughtful
- 1.3 We are Responsible Internet and Device Users
- 1.4 We are Information Protectors
- 1.5 We are Good Digital Citizens
- 1.6 We are Responsible Gamers
- 2.1 We are Year 2 Rule Writers
- 2.2 We are Not Online Bullies
- 2.3 We are Safe Searchers
- 2.4 We are Code Masters
- 2.5 We are Online Behaviour Experts
- 2.6 We are Game Raters

Greenwich

- 1a Modelling (difference between on screen and real life)
- 2c Finding Information
- 3e Using Email

Newham

Y1 Modelling

Equals

- 2.3e Different ways to communicate
- 3.1a Information: In the community
- 3.1b Introducing the Internet
- 3.1c Data: Questions and answers
- 3.1d Introduction to spreadsheets
- 3.3e Introducing e-mail

LGFL SEND Safe <https://www.lgfl.net/online-safety/resource-centre?s=35>

Resources

- LGFL Inclusion (SEND) <https://www.lgfl.net/inclusion/>
- LGFL Online Safety Resources <https://www.lgfl.net/online-safety/resource-centre>
- Know It All for SEND <http://www.childnet.com/resources/know-it-all-for-teachers-sen/bsl-smart-rules>

Videos

- Child Focus eSafety Cartoon – message to tell an adult if you see something that concerns you on the Internet/Computer https://www.youtube.com/watch?v=d5kW4pl_VQw
- 'I saw your Willy' dangers of sexting for young children <https://www.youtube.com/watch?v=z1n9Jly3CQ8>
- 'Lucy and the Boy' dangers of making friends with internet 'friends' <https://www.youtube.com/watch?v=kwcl-VP3FYc>
- Dongle Stay Safe - <https://www.youtube.com/watch?v=VcM7sV9ZrGM>
- 'Lee & Kim Adventure Animal Magic' - Cartoon Suitable KS1 – risks of online games <https://www.youtube.com/watch?v=-nMUbHuffO8>
- 'Know your Friends with Josh and Sue' (CEOP) for children with moderate to severe learning needs https://www.thinkuknow.co.uk/parents/Support-tools/Films-to-watch-with-your-children/Josh_and_Sue_original1/
- Wild About Safety with Timon and Pumbaa: Safety Smart® Online <https://www.youtube.com/watch?v=M-nih8mFvVk>
- Sam's Real Friends A BSL Film about a deaf boy staying safe online <https://www.youtube.com/watch?v=tBmW7OIQldl&t=18s>
- Digiduck Engaging online safety stories for young children aged 3-7 <https://www.childnet.com/resources/digiduck-stories>
- Jessie and Friends Episode 1 https://www.youtube.com/watch?v=Yt0us2O3_Jk

Childnet Star SEN Toolkit <https://www.childnet.com/resources/star-sen-toolkit>

Childnet teaching resources <https://www.childnet.com/resources>

Barefoot Computing <https://www.barefootcomputing.org/primary-computing-resources>

- Safety Snakes

Clicker 7 (on IWB or PC) (matching sets – student photo to name, identifying groups, etc)

See Kim Day for examples

iPad Apps

- Animal Face (disguising appearances)
- Scene and Heard (add hot spots to photo scene to play audio and video)
- Chooselt Maker (identifying equipment for a purpose)

Online Safety Books

- Websters Email, Websters Bedtime, Websters Manners
- Chicken Clicking
- Dot
- Penguin Pig
- Troll Stinks
- Once Upon a Time Online
- **Linda Liukas**
 - Hello Ruby: Journey Inside the Computer
 - Hello Ruby: Expedition to the Internet
- **Miles Kelly**
 - Digital Skills
 - Logic and Data
 - How Does My Tablet Work

BBC Bitesize (Digital Literacy)

<https://www.bbc.com/bitesize/subjects/zyhbwmn>

- What is a Computer?
- How can Computers Help You Learn?
- What is the Internet?
- How do People Use Computers at Work?
- How Can You Use the Internet?
- How Do You Take Care of Your Personal Information?
- How Can You Use the Web Safely?

Online Resources

- **Busy Things** <https://www.busythings.co.uk/lgfl-login/> Internet Safety Resource Pack
- **Education City** Computing KS1 and KS2 www.educationcity.com
- KS1 Technology Outside School
- KS1 Staying Safe Online
- KS2 Services of the Internet
- KS2 Consequences – When Things Go Wrong
- KS2 No Uncertain Terms – Choosing Appropriate Search Terms

Physical Devices

Alexa/Google Home Assistant

Orange Pathway

	Computing Programme of Study (ELGs & KS1)	All pupils will...	Most pupils will...	Some pupils will...
Information Technology	<p>Early Learning Goals</p> <p>22-36 Mths: Seeks to acquire basic skills in turning on and operating some ICT equipment.</p> <p>30-50 Mths: Knows how to operate simple equipment, e.g. turns on CD player and uses remote control. Knows that information can be retrieved from computers</p> <p>40-60 Mths: Uses ICT hardware to interact with age-appropriate computer software</p> <hr/> <p>KS1: use technology purposefully to create, organise, store, manipulate and retrieve digital content</p> <hr/> <p>KS2: Use search technologies effectively</p> <p>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</p>	<ul style="list-style-type: none"> • Select favourite Apps on an iPad • Take photos using iPad • Take photos with a camera • Insert a DVD into a computer and play DVDs • Begin to develop keyboard skills using letters and begin to create sentences with assistive writing tools (Clicker Gridsets, word predictor, audio support, etc) • Use numbers on keyboard • Log onto and off computers • Identify which program is needed for specific task • Print a document, online content and picture • Insert a blank CD disc or memory stick into a computer and copy documents to it • Search for topics using a search engine • Start and save a new document <hr/> <ul style="list-style-type: none"> • Use technology effectively, purposefully and creatively in a number of ways • Obtain content from the world wide web using a web browser. • Create basic drawings or art using technology 	<ul style="list-style-type: none"> • Understand how to use technology to create a presentation or publication for a particular purpose • Use images, text and sounds from various sources to use in a presentation document • Explore different ways of presenting text , sound and graphics to convey a message • Recognise that digital content can be represented in many forms. • Change common font features in a document • Highlight, copy, cut and paste in a document • Stores digital content using appropriate file and folder names. • Start and save a new document and save a revised copy of a document as a new version 	<ul style="list-style-type: none"> • Can distinguish between some forms of digital content and the different ways that they communicate information. • Use a voice activated home control device purposefully to find out information • Recognise that programs can work with different types of data: text and number and that data can be structured in tables to make it useful. • Use technology to develop ideas through editing and changing picture, sound, text or symbol content throughout a creation process. • Use questioning to determine criteria, records information using databases, create charts and graphs to display the data • Select and use a Word Processor, Spreadsheet and Presentation program for a particular purpose • Use a range of technology devices, to record, compose, collect, communicate and organise musical sounds • Make, label and use folders on desktop or other storage location

Resources

Schemes of Work (accessed via <https://www.risingstars-uk.com/login> or via T:\AAA School Documents\PLANNING\SPECIALIST SUBJECT PLANNING\COMPUTING\Computing SCHEMES OF WORK)

Switched on Computing (Productivity and Creativity Focus)
 1.3 We are Painters
 1.6 We are Celebrating
 2.3 We are Photographers
 2.6 We are Zoologists

Equals
 2.1a Information: In the school
 2.1b Beginning to find information
 2.1c Data: Labelling and classifying
 2.1d Data: Introducing pictograms
 2.2c Making and recording sounds
 2.3a Making pictures
 2.3b Beginning to write
 2.3c Text and pictures
 2.3d Making talking books
 2.3f Taking and printing photographs
 3.2c Manipulating sounds
 3.3a Using painting tools
 3.3b Writing in different ways
 3.3c Introduction to desktop publishing
 3.3d Introduction to multimedia tools
 3.3f Using photographs
 4 Finding things out
 (S) 1a Information: About me

Greenwich
 1c The Information Around Us
 1e Representing Data Graphically
 1d Labelling and Classifying
 1b Using a Word Processor
 2a Writing Stories
 2b Creating Pictures
 2e Questions and Answers

Newham
 Y1&2 Creating Pictures
 Y1&2 Handling Data
 Y1&2 Word Processing
 Y2 Internet – Famous People
 Y2 Internet – Plants and Animals
 Y2 Word Processing V3

Explore, use and manipulate text, sounds, images:

- Sound Beam (Explore and manipulate)
- Mobile Floor Projector (use and interact with sound and images to set up games)
- Toc and Roll iPad App (manipulate sounds)
- Cosmo
- SMART Notebook Activities

BBC Bitesize (Information Technology) <https://www.bbc.com/bitesize/subjects/zyhbwmn>

- What are the Main Parts of a Computer?
- How is Data Stored on a Computer?
- How Do You Save Your Work?
- How Can You Write a Story on a Computer?
- How Computers Have Changed
- How Does Animation Work?
- How Do You Make Video on a Computer?

How Can You Make Art on a Computer?

iPad Apps:

- Perfect Video
- Comic Life
- Thumb Jam
- Garageband
- Toc and Roll iPad App
- Lego Story Visualiser
- My Storybook Maker
- Sock Puppets
- iMovie
- Explain Everything Presentation app (using images, video, text, annotation, audio, etc)
- SquiggleFish (use own images in animation/story)
- Do Ink Green Screen app
- Thumb Jam (create music)
- Toc and Roll iPad App (manipulate music sounds)
- My Storybook Maker (create own book with images, sounds, text, etc.)
- Sock Puppets (create puppet show)
- Do Ink (Green Screen app)
- Sound Touch (play animal sounds)
- Finger Paint (creative cause & effect)
- Bubl Draw (creative cause & effect)
- Jelly Music (musical cause & effect)
- Looper (recording own sounds)
- Keezy (recording own sounds)
- Soudala Play (recording own sounds)
- TapThePic (linking images and recording sounds)
- Air Vox (iPad sound beam)
- Little Fox (making music)
- Soundrop
- Fingertip Maestro
- Musical Hands
- Music4Kids (make own song)
- Fingertip Vocals
- Drummer
- Paint Studio (animation)
- MusicalMe HD (early music creation)
- Incredibox (music creation)
- **Clicker Apps (iPads or Chromebooks) or Clicker 7 (PCs)**
 - Connect
 - Sentences
 - Docs
 - Books

Physical Devices
 Alexa/Google Home Assistant

LGFL Online Learning Resources

- BBC Sound Effects <https://www.lgfl.net/learning-resources/summary-page/bbc-sound-effects>
- Audio Networks <https://www.lgfl.net/learning-resources/summary-page/audio-network>

Online Resources

- **Education City** Computing KS1 and KS2 www.educationcity.com
 KS1 Read All About It - Creating Content
 KS1 Read All About It - Making Changes
- **LGFL**
 - **Busy Things** <https://www.busythings.co.uk/lgfl-login/>
 - Busy Paint and Publisher
 - Busy Graph Maker
 - Monster Grid

Just2easy

- <http://my.uso.im/j2e/>
- J2data (databases)
 - J2write (writing/presentation)
 - Jcamera (photo editing)
 - J2office
 - Writer (Basic Word)
 - Spreadsheet (Basic Excel)
 - Present (Basic PowerPoint)
 - JIT (Infant Toolkit)
 - Write
 - Paint
 - Chart
 - Pictogram
 - Branch (selection criteria)