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 students 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/

	Computing Programme of Study (KS1 & KS2)	All students will…	Most students will…	Some students will…
Computer Science	**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 Use logical reasoning to predict the behaviour of simple programs **KS2:** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts Use sequence, selection, and repetition in programs; work with variables and various forms of input and output Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web Appreciate how [search] results are selected and ranked.	• 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, video or 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 unplugged 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.	• Understand that sets of instructions are needed to achieve a desired outcome • Sequence a set of instructions to control a process using a physical device • Use commands to move a physical device from one place to another. • Use logical reasoning to predict the behaviour and outcomes of simple programs • Know that computers collect data from various input devices, including sensors, etc • Understand the difference between hardware and application software. • Understand the difference between the internet and internet service (e.g. world wide web). • Understand why and when computers are used.and show an awareness of tasks best completed by humans or computers.	• Understand how algorithms are implemented as programs on digital devices; • Sequence a set of instructions to control an onscreen device to achieve a desired outcome. • Analyse, predict and modify actions (debugging). in sequences of events (algorithms) to achieve a goal. • Use more complex programming (repetition and two-way selection) to improve and simplify sets of instructions (repeat, do…until, if…then and else statements) • Design solutions by breaking up a problem into smaller parts (decomposition). • Identify similarities and differences in situations and can use these to solve problems (pattern recognition). • Use simulations to make and explore choices and predictions • Explore how different computer networks work and are structured • Understand about the different components and functions of a computer and the difference between an input and output device.

Purple Pathway

Resources

<table>
<tr><td rowspan="2">Computer Science</td><td colspan="4">Resources</td></tr>
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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)
1.1   We are Treasure Hunters
1.2 We are TV Chefs
2.1 We are Astronauts
2.2 We are Games Testers
3.1 We are Programmers
3.2 We are Bug Fixers
4.1 We are Software Developers
4.2 We are Toy Designers
5.1 We are Game Developers
5.2 We are Cryptographers
Learn To Code – Practice Books 1-3 (see overview)

Greenwich
Year 1f Understanding Instructions
Year 2d Controlling a Floor Turtle
Year 3d Exploring Simulations
Year 4e Modelling Effects on Screen

Newham
Year 3 Giving Instructions

Equals
3.2a Controlling devices
3.2b Designing and exploring environments
4.2a Using a range of devices
4.2b Exploring simulations
4.2c Manipulating and sequencing sounds
(S) 2a Noticing things happen
(S) 2b Beginning to make things happen with switches
(S) 2c Beginning to make things happen with the computer

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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)

iPad Apps
- Hopscotch
- Daisy the Dinosaur
- Fix Machine (problem solving)
- Scratch Jr
- Pettsons Inventions (problem solving)
- Bubble Ball (problem solving)
- Blue Bot and Bee Bot
- A.L.E.X
- Cargo-Bot (coding & problem solving)
- Mekorama (problem solving)
- Minecraft
- Blox 3D Junior, Blox 3D City, Blox 3D World
- QR Readers (to create sets of instructions to follow)
- Following Directions (following instructions)

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Clicker Apps (iPads or Chromebooks) or Clicker 7 (PCs)
-      Connect, Sentences, Books
Apple - Keynote
Google - Slides
Microsoft - PowerPoint
(Writing a story or a sequence of actions/instructions to solve a real life problem (ie: making a smoothie, sandwich, crossing the road, constructing a model, etc)

Simulation Apps
- Airport HD Lite (simulation game),
- My PlayHome /School/Shop (simulation and interaction with real life environments)

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

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Online Resources
- **Education City** Computing KS1 and KS2 *www.educationcity.com*
- **LGFL**
- **Busy Things**
  - Tutorial2
  - Loops
  - Loopy
  - Dancing 2
  - Conditionals
  - Puddles
  - Events
  - Collect Stars 1, 2 & 3
  - Variables
  - Dance Steps2
  - Project Call and Response
- **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?
- **Kodo** (Visual Programming Environment)
- **Code.org** (make choices and predictions through coding in different simulated environments)

Physical Resources
- **Osmo** Coding Jam, Coding Awbie
- **BeeBots/BlueBots** (with or without BlueBot App)
- **WeDo Lego Sets** (model making and controlling)
- **Other Lego sets** (following instructions, problem solving, debugging, decomposition, predicting, recognising patterns, etc)

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</table>

Computing Programme of Study (KS1 & KS2)	All students will…	Most students will…	Some students will…
Digital Literacy **KS1:** recognise common uses of information technology beyond school Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. **KS2:** Understand the opportunities [networks] offer for communication and collaboration Be discerning in evaluating digital content Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Understand that people interact with computers. • Explore different ways of interacting with computers. • Recognise that a range of digital devices can be considered a computer. • Recognise how technology is used to control and organise people, places and things in everyday life (ie: supermarkets, lifts, traffic light systems, airports, kitchens, televisions, etc.) • Recognise and can use a range of input and output devices. • 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 • Recognise some ways in which the Internet can be used to communicate • Understand how to sort and categorise and how this helps to find things through questioning or searching *(to understand how search engines work)* • Know to apply a level of scepticism when engaging in online content and what to look for (sponsored ads on search engines, fake news fact and opinion and bias, etc) • Understand who to tell when encounters content that upsets or worries them when online • Be aware of peers and recognition of self and understand families and groups to which they belong • Be aware that others may have different basic needs, viewpoints and opinions and that people may behave in certain ways for different reasons • Understand acceptable behaviour • Understand class online safety rules drawn up and agreed upon by the whole class	• Select a device or program that will best perform a particular task and achieve a desired outcome. • Use a voice activated home control device purposefully to control their environment • Select, combine and use internet services. • Know how to narrow down or refine a search • Use collaborative tools over a network to work on a group project • Purposefully use electronic methods of communication including composing and sending an email to known people • Know to tell when unacceptable content or contact is made when online and know that this could be in real life or online • Know what is personal information (name, address, birthday, etc.) • Know who can and can't be trusted to share personal information • Know what information should and should not be put online without asking a trusted adult first • Know that other people's identity online can be different to their identity in real life. • Understand acceptable behaviour and know that some people can be unkind both online as in real life • Know how passwords are important to protect information and devices • Identify rules that help them safe and healthy when using technology and how technology can have a negative impact. • Develop a range of strategies to evaluate and verify information before accepting its accuracy (hidden bias or purpose) • Understand that there are legal age limits to use some websites, games and social media sites.	• Use technology with increasing independence to purposefully collect, organise, manipulate and present data and information in digital content. • Know the difference between physical, wireless and mobile networks. • Know the names of network hardware (e.g. hubs, routers, switches) • Understand how to organise emails and change system/personal settings • Understand the structure of a URL (web address) of a website and email address • Use an electronic calendar • Use a mobile phone • Understand how messages are sent across a network (email) and that information can be encrypted for safety and security. • Understand the importance of communicating safely and respectfully online • Know what is acceptable and unacceptable behaviour when using technologies and online services and know a range of ways to report this • Know that they might need permission to use some content on the Internet • Describe ways in which people might make themselves look different online • Give examples of issues that might make them sad, worried, uncomfortable or frightened and give examples of how they might get help • Understand why they should not post or share detailed accounts of their personal lives and to know how to ensure they have turned-on privacy settings; • Understand why they must not post pictures or videos of others without their permission; • Have strategies for dealing with receipt of inappropriate materials; • Understand why and how some people will 'groom' young people for sexual reasons

Purple Pathway

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
3.4 We are vloggers
3.5 We are Communicators
4.4 We are HTML Editors
4.5 We are Co-authors
5.4 We are Web Developers
5.5 We are Bloggers

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
Also Available Lower Key Stage 2 (12 units) and Upper Key Stage 2 (12 Units)

Greenwich
Year 3e Using Email
Newham
Year 3 Internet- email
Equals
3.3e Introducing Email
4.3e More ways of communicating electronically

(S) 1a Information: About me

LGFL Online Learning Resources
Just2easy http://my.uso.im/j2e/ J2bloggy, J2webby
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=d5kW4pI_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-njh8mFvVk
- Sam's Real Friends A BSL Film about a deaf boy staying safe online https://www.youtube.com/watch?v=tBmW7OlQLdI&t=18s
- Digiduck Engaging online safety stories for young children aged 3-7 https://www.childnet.com/resources/digiduck-stories

Childnet PSHE Toolkits *https://www.childnet.com/resources/pshe-toolkit*
Childnet Star SEN Toolkit *https://www.childnet.com/resources/star-sen-toolkit*
Childnet teaching resources *https://www.childnet.com/resources*

Physical Devices
Alexa/Google Home Assistant

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

G Suite for Education (Google Tools)
- Google Classroom, Gmail, Hangouts
Collaboration Applications
- Google Docs
- Microsoft Collaboration Tools
- SMART Notebook Quizzes, Games, Activities

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?

Barefoot Computing https://www.barefootcomputing.org/primary-computing-resources - Safety Snakes

iPad Apps
Minecraft (for problem solving, collaboration and creativity)
QR Scanners

	Computing Programme of Study (KS1 & KS2)	All students will…	Most students will…	Some students will…
Information Technology	**KS1:** Use technology purposefully to create, organise, store, manipulate and retrieve digital content **KS2:** Use search technologies effectively Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	• Use technology effectively, purposefully and creatively in a number of ways • Understand how to use technology using images, text and sounds from various sources to create a presentation or publication for a particular purpose • Change common font features in a document • Highlight, copy, cut and paste in a document • Explore different ways of presenting text, sound and graphics to convey a message • Obtain content from the world wide web using a web browser. • Store 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	• Recognise that digital content can be represented in many forms. • Explore different ways of interacting with computers and understanding how computers make sense of this input. • Use a voice activated home control device purposefully to find out information • Can distinguish between some forms of digital content and the different ways that they assist in communicating information • Use filters or can perform single criteria searches for information. • Use technology to develop ideas through editing and changing picture, sound, text or symbol content throughout a creation process. • Use spell check feature in a computer to check spelling of words in documents • 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 • Make, label and use folders on desktop or other storage location.	• Understand the difference between data and information. • Use questioning to determine criteria, record information using databases, create charts and graphs to display the data • Use a range of technology devices, to record, compose, collect, communicate and organise musical sounds • Recognise the audience when designing and creating digital content and adapt the content appropriately • Find and cite online sources • Select and use a Word Processor, Spreadsheet and Presentation program for a particular purpose • Describe how to back up data and why it is important and will back up data on a regular basis • Use a portable drive in a computer and copy items to and from the flash drive • Use the computers search function to find specific documents on the computer • Monitor and maintain a fully charged laptop battery • Obtain directions between locations using an online mapping site.

Purple Pathway

Resources

Information Technology

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
3.3 We are Presenters
3.6 We are Opinion Pollsters
4.3 We are Musicians
4.6 We are Meteorologists
5.3 We are Artists
5.6 We are Architects

Greenwich
Year 4a Writing for Different Audiences
Year 3c Introduction to databases
Year 3b Manipulating Sounds
Year 3a Combining Text and Graphics

Newham
Year 3 Data Handling
Year 3 Word Processing

Equals
3.1a Information: In the community
3.1b Introducing the Internet
3.1c Data: Questions and answers
3.1d Introduction to spreadsheets
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
4.1a Information: Advertising and the media
4.1b Information through the Internet
4.1c Surveys
4.1d Using spreadsheets
4.2c Manipulating and sequencing sounds
4.3a Working with images
4.3b Developing ideas for a wider audience
4.3c Desktop design
4.3d Creating a multimedia presentation
4.3f Making videos

Physical Devices
Alexa/Google Home Assistant

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)

- Do Ink Green Screen app

- **Clicker Apps (iPads or Chromebooks) or Clicker 7 (PCs)**
- Connect
- Sentences
- Docs
- Books

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)
- Use images and sounds in Scratch Projects

Creative/Presentation Platforms
- G Suite for Education Google Tools (Docs, Sheets, Slides)
- Apple Pages, Numbers, Keynote
- Microsoft Office Word, Excel, Powerpoint Creative Tools
- SMART Notebook Activities

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

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)

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?