COMPUTING AND ONLINE SAFETY AT

SHIPLEY

# Friendship, Faith, Future

**SUBJECT: COMPUTING**

**NATIONAL CURRICULUM**

# Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

# Aims

The national curriculum for computing aims to ensure that all pupils:

♣ can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation

♣ can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems

♣ can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems

♣ are responsible, competent, confident and creative users of information and communication technology.

**INTENT**

Our aim is to provide a high-quality computing education which equips children to use computational thinking and creativity to understand the potential of technology and start to build computing skills for the future. The curriculum will teach children key knowledge about how computers and computer systems work, and how they are designed and programmed. The children will have the opportunity to gain an understanding of computational systems of all kinds, plugged or unplugged. We want them to become digital creators, using technology to support other areas of their work and lives, and also to understand the responsibilities of being digital consumers on their time, relationships and wellbeing. We teach them to become good digital citizens, to know how to stay safe and keep others safe online, to be aware of the need to test out what and who they see and the importance of what they share in creating their own digital footprint.

By the time they leave Shipley Primary, children will have gained key knowledge and skills in the three main areas of the computing curriculum:

# Computer Science

* To enable children to become confident coders on a range of tools.
* To develop children’s understanding of technology and how it is constantly evolving.
* To create opportunities for collaborative and independent learning.

# Digital Literacy

* To enable a safe computing environment through appropriate computing behaviours.
* To allow children to explore a range of digital tools.
* To promote pupils’ spiritual, moral, social and cultural development.

# Information Technology

* To develop ICT as a cross-curricular tool for learning and progression.
* To promote learning through the development of thinking skills.
* To enable children to understand and appreciate their place in the modern world.

**IMPLEMENTATION**

To enable all children to access the different digital tools we have, we have developed a clear and effective, bespoke scheme of work that provides coverage in line with the National Curriculum. Teaching and learning facilitates progression across the key stages within the strands of digital literacy, information technology and computer science. The computing curriculum is taught discreetly by a specialist teacher and children are given opportunities to apply it to support wider learning within the classroom. Specific lessons relating to online safety and personal information are taught to the children. It is a key priority with children being taught what we mean by personal information, who should have access to it and how to keep it safe. Children are introduced to strong passwords and safe communication.

Our children begin their journey with technology in Early Years, with access to tablets and classroom laptops. They playfully explore the Poisson Rouge website and develop mouse skills. Teachers facilitate children’s curiosity with challenge and modelling how to use the equipment carefully and safely.

In KS1 children continue their journey using Tizzy’s First Tools software to create and refine digital work. They develop graphics and text skills and learn key skills of saving and opening files. They learn how to plan, give and refine instructions and begin to be able to debug when something doesn’t work out the way they imagined. Coding progresses from unplugged activities to coding games where the children learn to problem solve and debug code and coding tools where they can build their own projects. Children learn to independently log on and off a laptop using their class username and password. They learn about online safety and what to do if they encounter something which makes them feel uncomfortable as well as what personal information is and why it is important we don’t share it with someone on the internet. These lessons link with our PSHE lessons. Children sort and classify objects. They develop their data handling skills through collecting their own data, creating tally charts and representing data graphically on the computer as pictograms, block graphs and bar charts.

As children progress through KS2 they learn to build and debug code using sequence, repetition and selection. They build, develop, debug and evaluate games and projects that introduce them to a range of coding blocks including sensing, variables, operators, sound and pen blocks. They are taught how to use Microsoft Office software including Word, PowerPoint, Excel and Publisher. The children explore increasingly complex databases and learn to use graphing, searching, sorting tools to summarise and draw conclusions from the data. They develop their skills and understanding of graphics, using both bitmap and vector graphics tools to create images, which they then use to make animated movies. They have the opportunity to take apart a laptop and have hands on exploration of the computer components. Alongside this, children learn what the internet is and how it delivers the world wide web and other services to their own devices. From Year 3 onwards they also develop their touch typing through frequent short practice sessions using an online touch typing teaching tool at the beginning of computing lessons

Disadvantaged and SEND pupils are at the heart of all planning sequences in the school. We use a range of scaffolds, differentiation and support strategies in order to ensure every pupil can access the learning. We recognise that children who may find literacy-based activities challenging can achieve highly in graphics or programming activities and vice versa. In computing lessons key vocabulary us presented aurally and visually along with practical opportunities for application. Teaching content is carefully sequenced and revisited as children move through the school. Assistive technology is used as needed.

Aspects of online safety are taught and revisited throughout each year of KS2 to help ensure children leave with a good understanding of how to keep themselves safe online and what to do if they come across something that makes them uncomfortable. Upper KS2 understand the importance of media balance and appreciate that as they get older, they are more responsible for their online presence and how often they access a variety of forms of media.

We use selected resources from Project Evolve and other providers to teach the children the following aspects of online safety:

* Self-image and identity
* Online relationships
* Online reputation
* Online bullying
* Managing online information
* Health well-being and lifestyle
* Privacy and security
* Copyright and ownership

**EYFS**

# Understanding the World

**EYFS Computational Thinking**

It is important in the Foundation Stage to give children a broad, play-based experience of Computing in a range of contexts, including outdoor play. Computing is not just about computers. Early years learning environments should feature Computing scenarios based on experience in the real world, such as role play. ‘Computational Thinking’ is a set of problem solving skills that we can use in everyday life. Teachers facilitate children’s curiosity with challenge and modelling how to use the equipment carefully and safely.

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| **Tinkering** | Playing and exploring |
| **Making** | Making things, checking and fixing things |
| **Collaboration** | Playing and working collaboratively |
| **Persevering** | Not giving up |
| **Logic** | Anticipating and explaining is logical reasoning |
| **Pattern** | Grouping things, comparing, spotting similarities and differences, working out rules |
| **Abstraction** | Naming and labelling, working out what is important, sticking to the main theme, ignoring what is not important, creating a summary |
| **Algorithms and Decomposition** | Responding to instructions, ordering things, sequencing things, introducing storylines, working out different ways to do things, breaking problems down into steps |

BUI**LDING KNOWLEDGE AND UNDERSTANDING IN COMPUTING**

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| **Skills Progression in Computing** | | | | |
| **Year group** | **Connect** | **Create and Communicate** | **Code and Control** | **Collect and Interpret** |
| **Key Stage 1** | * Independently log on to the network with a class username and password. * Independently use a range of selected websites and web-based activities. * Explain what to do if something on the computer worries them. * Give examples of personal information. * Know they should keep personal information private when communicating with others via the computer or tablet. | * Confidently use a range of applications and devices to create, explore and communicate. * Develop images using suitable graphics programs such as Tizzy’s First Tools, 2DIY and MS Paint. * Change the brush colour and width; use lines, shapes, undo, fill. * Type several sentences using the keyboard. * Type capital letters by holding the Shift key. * Edit their text by using the Backspace, arrow keys and Enter/Return key. * Independently save files; know each filename must be different. Open files and continue working on them. | * Understand that an algorithm is a set of precise instructions to perform a process. * Plan and join blocks or select instructions to write code that solves a problem and to create their own code for a specific purpose. * Attempt to debug code. * Estimate and choose appropriate parameters for distance, and a quarter turn to the left and right. * Apply the concept of a repeated instruction to solve a problem or achieve an effect. | * Collect data by measuring and counting, including tally charts. * Enter data into the computer to make a table and a chart. * Describe what pictograms and block graphs show, using comparative language (e.g. how many more/less). * Create a branching tree database on the computer by asking suitable yes/no questions to classify objects into groups. |

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| **Lower Key Stage 2** | * Know that websites are on the Internet and that this is located beyond the school. * With support, identify key words and search for specific information using a search engine. * Know that some website content is not suitable for children and that certain websites, such as social media sites, have minimum age rules. * Explain why personal information should not be shared when communicating with others via the computer or tablet. * Know that messages posted online should be respectful. Explain what to do if a message or website worries them. * Know what to do with messages received from people they don’t know. * Know features that make a password strong. * Independently log into Google Classroom to access, complete and turn in assignments. | * Use a range of different software and tools. Name some programs/tools suitable for different purposes. * Type paragraphs of text using both hands. * Independently attempt to correct spelling and grammar and use the spell check tool. * Act upon feedback to improve work by editing content. * Independently insert images into work (from files, clipart and by copying and pasting) and resize. * Develop their own images in painting and graphics programs by selecting sections and copying, pasting, resizing and rotating. * Format work by changing e.g.font style, colour, size and bold, italic, underline, justification. * Navigate to specific school network locations to open or save files. * Print work using specific print settings e.g. 2-sided. | * Decompose a problem into key parts. * Plan and create sequences of instructions or blocks to successfully solve a problem or create specific effects or outcomes. * Independently use repetition (Repeat and Forever) and selection (If-Then) conditions to create specific outcomes. * Estimate and choose parameters for distance and turns to the left and right. * Begin to use x and y coordinates, understanding that (0,0) is in the centre and that =/- have opposite effects. * Describe to others what their code does. * Test their code and use the outcome to refine and debug. * Independently spot a bug, identify the location but need help to fix it. | * Collect data and organise into a flat file database or spreadsheet (eg Junior Viewpoint or Excel) * Use search and sort to find answers to specific questions in an educational database (e.g. Junior Viewpoint). * Know that databases can contain errors. Be able to spot obvious errors in a database. * Create a range of charts; describe what their charts show. |

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| **Upper Key Stage 2** | * Name key internal components of a computer. * Know that data travels using the Internet and that the World Wide Web is web pages stored on servers. * Know that a search engine generates a list of results by using an index. * Identify key words and search for specific information using a search engine, selecting suitable websites from the list generated. * Know that the content on the Internet may be owned by people and this is called copyright. * Explain what kinds of Internet content may be inappropriate and explain what they can do if they come across such content at school or at home. * Explain why they need to communicate respectfully on social networking sites. * Know that pictures and personal information shared on devices and phones can be viewed, saved and passed on by others. State some of the risks of using online communities. Know how to reduce them and how to report problems. | * Choose suitable programs, tools and devices for different purposes. Combine more than one tool to achieve a final outcome. * Type a page of text efficiently. Make attempts to touch type. * Given feedback, improve, extend and reorganise their work. * Arrange and format parameters within different programs (justification, borders etc.) * Use Print Preview and make appropriate choices within the print options. * Know where files are stored on the network; know how to use My Documents and shared network drives for file storage. * Organise their stored files by making folders. Rename files and folders. | * Decompose a problem into key parts and develop a solution in the form of algorithms and/or code. * Create and debug sequences of code incorporating multiple sprites, costume switches, backdrop effects and a variety of inputs * Create and use variables to store values. * Confidently use x and y coordinates, understanding that (0,0) is in the centre and that +/- have opposite effects * Use IF-THEN-ELSE scripts. * Set events to control other events by ‘broadcasting’ information as a trigger. * Use Boolean (mathematical) operators in scripts or procedures. * Approach debugging systematically. Identify locations of bugs and attempt to fix them. | * Know that databases hold information in an organised way. * Answer questions by searching a database correctly using Boolean operators (<=,>=, AND). * Independently question the reliability of data in a database or spreadsheet. * Format data in a spreadsheet. * Use simple arithmetical formulae, SUM and fill down to perform spreadsheet calculations. * Discuss and compare data from charts they have made |

**COMPUTING LONG TERM PLAN 2023-24**

The computing curriculum is planned to cover these specific areas of study.

* Data handling
* Graphics & Animation
* Coding
* Network and internet
* Presentation
* Research
* Control and sensing
* Online safety
* Keyboard skills

Long term plans are reviewed each year as class groupings change. We consider previous curriculum coverage alongside assessment data to adjust the curriculum to match the needs of the children.

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|  | **Autumn 2023** | **Spring 2024** | **Summer 2024** |
| **Willows**  **YR** | **Basic skills**  Holding the mouse.  Click & double click. Click and drag  Going back. Close a window  Key icon to log off  **Poisson Rouge** website activities  **Keyboard skills** – Keyseeker Y1  **Tizzy’s First Tools – Paint**  Mark making in a painting program. Colours, stamps, lines. Type name. | **Pictures & name with Tizzy’s First Tools - Paint**  **Y1 –** Shift for capital letters.  **Fuzzbugs** – counting, sorting and comparing.  **Safe on the Internet**  Smartie story. Ask before using the computer or tablet. Tell someone if anything worries you.  **Code & control**  Oral instructions on floor grid. F/B/Turn  **Tizzy’s First Tools - Move** level 1&2  Save by typing name and filename | **Log on with class username/ password**  **Keyseeker - YR**  **Tizzy’s First Tools - Write**  Picture bank. Resize, rotate. Name/sentence. Save  **Maths games** – Ten Frame  **Sorting and classifying**  Sort and group objects.  Tizzy’s First Tools – Chart Level 1 |
| **Oaks**  **Y1** | **Log on: class username/password**  **Keyboard skills** – Keyseeker (weekly)  **Tizzy’s First Tools – Paint**  Draw pictures and type name. Save work. Shift for capital letters.  **Give instructions**  Everyday algorithms  Floor grid. Fd/Bk/R/L90°  Tizzy Move L1/2 | **Keyboard skills** – Keyseeker  **Look Cover Write Check** – game for independent spelling practice  **Safe on the Internet**  Chicken Clicking story.  Strangers; Personal information.  Tell someone. Don’t meet up.  **Data handling**  **J2Data –** Collect data and create pictograms. Simple questions | **Keyboard skills** – Keyseeker  **Keyboard, maths and spelling games**  **Scratch & programming**  Scratch - sprites and stage;  Looks code  **Tizzy Write** – choose resize images; type sentence. |
| **Oaks**  **Y2** | **Log on: class username/password**  **Keyboard skills** – Keyseeker (weekly)  **Tizzy’s First Tools & Paint**  Draw pictures and type sentences. Save work. Shift for capital letters.  **Parts of the computer**  **Give instructions**  Everyday algorithms  Floor grid. Fd/Bk/R/L90°  Tizzy Move L1/2 (3 optional)  Code.org – Course 1 #4 Maze  Code.org - #5 Maze debugging | **Keyboard skills** – Keyseeker  **Look Cover Write Check** – game for independent spelling practice  **Safe on the Internet**  Strangers; Personal information.  Tell someone. Don’t meet up.  **Data handling**  **J2Data –** Collect data and create pictograms, block graphs and pie charts. Answer questions about their charts. | **Keyboard skills** – Keyseeker  **Branching database** using Tizzy’s First Tools - Branch  **Keyboard, maths and spelling games**  **Scratch & programming**  Scratch - sprites and stage; Scratch – tell a story (sequence)**;** If key pressed say (condition). |
| **Ash**  **Y3/Y4** | **Keyboard skills**  Doorway typing – weekly practice  **Ourselves Database**  Collect & enter data; Charts and search.  **Bitmap graphics & animation**  **Paint** **–** create image, copy, paste.  Pivot Stick Figure animation | **Storing your work** - Files, folders and servers.  Word - Text formatting.  Create a card in Publisher.  **Online safety**: Keeping personal information private; Digital footprint; Who are we talking to online? | **Finding & Presenting information**  Research  Read and select information from specific websites to answer questions.  **Powerpoint** Copy and paste image from website  Text boxes and text.  **Scratch & programming**  Everyday algorithms.  Sprites and stage. Repeat and forever blocks; If key pressed conditions with maze game. |
| **Sycamores**  **Y6** | **Keyboard skills** Doorway typing  **Control** – Flowol physical control  **Staying safe online**  Personal information & data security  Photo sharing – what the law says.  Friendships & Social media  Cyberbullying  Mobile phones  Managing your time online  Desktop publishing | **Keyboard skills** Doorway typing  **Scratch programming:** variables; operators; join; ask, random number; broadcast message  Repeat and pen blocks with operators to draw polygons.  **Control** – Microbits physical computing - pedometer | **Keyboard skills** Doorway typing  **Research and presentation**  What are websites?  How does online search work?  Judging reliability.  Making notes.  Build a website  **Spreadsheets & data handling**  Cell references, formulae, SUM, charts |

**COMPUTING LONG TERM PLAN 2022-23**

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| **Unit** | **Autumn 2022**  **(Ancient Egypt or Greeks??)** | **Spring 2023**  **(Oceans?)** | **Summer 2023**  **(Earth in Space)** |
| **Oaks**  **YR** | **Poisson Rouge** website activities  Holding the mouse.  Click & double click. Click and drag  Going back. Close a window  Double click to start an activity  Double click the Key icon to log off.  **Tizzy’s First Tools – Paint**  Type name.  Mark making in a painting program. Colours, stamps, lines.  **Fuzzbugs** – counting, sorting and comparing. | **Log on with class username/ password**  **Code & control**  Oral instructions on floor grid. F/B/Turn  **Tizzy’s First Tools - Move** level 1 and 2  Save file.  **Tizzy’s First Tools – Paint**  Type name. Use line, fill, undo.  Save work into Tizzy.  **Tizzy’s First Tools - Write**  Choose pictures form picture bank. Resize, rotate. Type name. Save work | **Keyboard skills** Keyseeker  **Safe on the Internet**  Your work belongs to you – put your name on it. Ask before using the computer or tablet. Tell someone if anything worries you. Jessie & Friends story.  **Sorting and classifying**  Sort and group objects.  Tizzy’s First Tools – Chart Level 1Select and sort objects. |
| **Oaks**  **Y1/2** | **Keyboard skills** – Keyseeker  **Tizzy’s First Tools – Paint**  Type name. Use line, fill, undo. Type sentences. Save work into Tizzy.  **Tizzy’s First Tools - Write**  Choose pictures form picture bank. Resize, rotate. Type sentences. Save work. | **Safe on the Internet**  Chicken Clicking story.  People you talk to online might not be who they say they are. What is personal information?  Tell someone if you are worried.  Be kind online just like in real life.  **Tizzy’s First Tools – Paint**  **Give instructions**  Algorithms; Oral instructions on floor grid. Fd/Bk/R/L90º  Tizzy Move L1/2 (3 optional)  Code.org – Course 1 #4 Maze and #5 Maze debugging | **Y2 Log in with own username**  **Graphics – Microsoft Paint**  Develop images using various features. Y2 save work in own Documents folder.  **Data collection**  Pictograms and charts with J2E  **Scratch & programming**  Scratch introduction - sprites and stage; Scratch – tell a story  Repeat, Selection (If-Then) – unplugged activities |
| **Ash**  **Y3 & 4** | **Keyboard skills**  Doorway online typing tutor – weekly 5min practice  **Google Classroom Introduction**  How to navigate, communicate, use Google docs and slides. Turning in work.  **Safe on the Internet**  Personal information? Privacy and sharing. Kim and Lee video SID video. Communicating with online and offline friends.  **Graphics Artists**  Create pictures in a paint program using copy/paste. Make card. | **E-safety**  Phishing scams  **Bookworms**  Search, calculator, graph in Excel, book review in PowerPoint.  **Database: Ourselves**  Make class database in Junior Viewpoint. Search. Make charts. | **Scratch & programming**  Everyday algorithms.  Revise sprites and stage.  Repeat and forever blocks;  If-Then/Touching colour blocks; Arrow key controls.  **World and oceans**  Web research; Copy/paste/snip images;  School network; Switch between multiple windows. Save/locate/open files. Make folders & organise files. |
| **Sycamores**  **Y5/6** | **Keyboard skills**  Doorway typing – weekly practice  **Scratch & programming**  Coordinates in four quadrants. Build a race circuit game.  **Google Classroom revision**  How to navigate, communicate, Google docs and slides. Turn in work.  **E-safety**: Password strength & security. Clickbait, Phishing, Digital footprints, How images are altered.  Managing your mobile phone.  **Data security**  What is data? How is it stored? Data security. | **Using a database**  Junior Viewpoint Weather Database. Searching (incl <> AND), sorting, charts.  **The Internet.**  Structure of the internet. Servers, cables and Routers. How data travels.  **How it works**  What’s inside a computer?  **Finding information**  What is the worldwide web? How search works. Effective searching. Tools within Word – picture layout, page setup, bullets and numbering, symbols, line spacing. | **Scratch & programming**  Variables: Voting machine.  **Scratch & programming**  Boolean operators: Join, Equals. Times tables quiz. Random number tables quiz. Turn right and left various angles. Repeat to draw shapes.  **Spreadsheets – Theme park competition**  Cell references; Formulae including Sum. Format cells.  Fill down. Fill series. Charts. |

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**IMPACT**

Our computing curriculum is planned to enable our children to use a wide range of digital devices confidently and safely. By the end of key stage 2, the children will have a growing confidence to apply the computational thinking concepts and approaches and the computer science concepts and approaches and be prepared for the key stage 3 curriculum.

We measure the impact of our curriculum through the following methods:

* Through discussion and feedback, children talk enthusiastically about their computing lessons and speak about how they love learning on the computer. Children across the school articulate well about the potential risks of being online, and can talk about ways to keep safe.
* Pupils know how and why technology is used in the outside world, and in the workplace. They know about different ways that computers can be used.
* Pupils use acquired vocabulary in computing, including coding, lessons. They have the skills to use technology independently, for example accessing age-appropriate software and games in EYFS and using a range of computer software independently in KS1 and KS2.
* Governor monitoring with our subject link governor.
* Annual reporting and tracking of standards across the curriculum.
* Printed and written work kept in children’s Computing books; files saved in their personal documents folder on the server; photo and video evidence of the pupils’ practical learning.
* Teacher assessments and notes recorded during and at the end of a unit of work