# Garswood Computing Curriculum and Knowledge Map:

## Computing Intent Statement:

**At Garswood we believe** 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.

**At Garswood we believe** Computing, is a cross-curricular subject that has a critical role in enhancing the learning process at all levels of the curriculum and across a broad range of subjects and activities. Used correctly the subject prepares today's children for tomorrow's technological future. The advances made in the world of technology during recent years have had a significant impact on our everyday lives. Already, in today's world, computers and information technology form an essential part of everyday life. Now, with the growth of the Internet and the easy accessibility of home computers, leaning communication platforms (such as Microsoft Teams) and virtual learning, it is vital that we encourage pupils to gain confidence and capability in the use of computational thinking, to prepare them for adult life.

**At Garswood our main aim is** to make all children 'ICT literate', defined in the National Curriculum as "...characterised by an ability to effectively use ICT tools and information sources to analyse, process and present information in order to model, measure and control external events".

## The process behind generating the Garswood Computing Curriculum

### Intent

When planning the Garswood computing curriculum the first step was to consider how the National Curriculum objectives would gel with our school and our philosophies and local society and history. We wanted to ensure diversity and equality were a considered feature of our teaching as well as a big part of our computing displays. We considered the importance of showing equality in gender, race and ability throughout the computing world.

Online safety was also a high priority within our computing curriculum as we have recently increased our online presence as a society and as a school with online learning. Children's knowledge and capability when using the Internet has significantly increased when compared to the same time five years ago, however, this also means children's understanding and vulnerability has become greater consideration and it has never been more important to ensure they are fully prepared to tackle the virtual world.

### Implementation

**Garswood researched and invested in specific schemes to help and advise:**

**iLearn2** provides computing activity packs to cover the Key Stage 1 and 2 Computing Curriculum. The packs include activities for a variety of software across multiple platforms, providing children with a wide range of skills. The activity packs are updated **EVERY** week, helping learn and teach the latest digital skills. ilean2 coverage ensures **progression of skills**, which are mapped out from years 1-6, providing full curriculum coverage. The e-safety and many other activities are also mapped to the Education for a Connected World (2020)

**Teach computing:** funded by the DfE. Built around an innovative progression framework where computing content has been organised into interconnected networks called learning graphs. The Teach Computing curriculum is structured into units for each year group, and each unit is broken down into lessons. Units can be taught in any order, with the exception of programming, where concepts and skills rely on prior knowledge and experiences.

**ProjectEVOLVE** resources each of the 330 statements from UK Council for Internet Safety's (UKCIS) framework "Education for a Connected World" with perspectives; research; activities; outcomes; supporting resources and professional development materials.

These schemes have been edited and combined to develop sequencing and build up progressional knowledge in order to develop a cyclic Computing Curriculum at Garswood. Units have been colour coded so that teachers can revisit past learning skills and knowledge easily before teaching the next progressional step. This ensures children revisit concepts and skills before building on next steps. We have also retained our commitment to equality and diversity within our computing knowledge in each year group.

**Garswood wants** the National Curriculum programmes of study to be translated into practical and manageable teaching plans, children will be taught in line with the agreed schemes above. The Computing curriculum plan below, will be referred to in order to see which units of work should be taught when and essential sticky knowledge and learning end points. This plan also specifies continuous work and cross curricular links. Each unit is broken down into individual sequence plans and all documents are internet liked to specific areas.

### Impact

Children who leave Garswood Primary School and transition to KS3, leave with competent skills underpinned by a body of knowledge. Through regular meetings with teaching staff and pupil voice we generate a good understanding of current knowledge within school.

Children screen shot work which is stored on their private Teams channels and save documents within their private 'documents' folder to provide evidence of skills they have developed in each unit.

Computing is delivered in accordance with the statutory entitlement as specified in the National Curriculum (September 2014). 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*

Children will attain the necessary breadth of study by being given opportunities to work with a range of information, explore with a variety of tools and devices, and compare the different uses of computing.

| | |
|---|---|
| **Inclusion:** | Our Garswood computing curriculum is ambitious for all and strives to address inclusion and disadvantage in its intent and implementation |
| **Aims:** | Underpinning the intent are key concepts and the National Curriculum Computing statements for Key stages 1 and 2 *(see blue bullet points in the coverage sections, below).* These are further refined with key substantive and disciplinary concepts: |

| Substantive concepts: | Definition – The content matter of computing |
|---|---|
| **Computer Science** | The technical design. The design of new software, the solution to computing problems and the development of different ways to use technology. |
| **Information Technology** | The technical knowledge. The design, use and understanding of hardware and software; computers and electronic systems for storing and using information. |
| **Digital Literacy** | The technical skills. The ability to use information and communication technologies to find, create, evaluate, and communicate information. |

| Disciplinary concepts: | Definition – how experts think, implicit knowledge in the NC |
|---|---|
| **Code** | Using and writing codes to produce instructions and algorithms; to solve problems; to test and use logic and sequences against inputs and outputs. |
| **Connect** | Being able to safely, efficiently and confidently digitally connect with others. |
| **Communicate** | Being able to safely, efficiently and confidently use apps and information technology to communicate ideas. |
| **Collect** | Being able to safely, efficiently and confidently find, evaluate, store, sort and use appropriate data. |
| **Celebrity** | Being able to identify influential people in the field of computing and how they have affected the history and science of computing. |

| | Term 1 | | Term 2 | | Term 3 | |
|---|---|---|---|---|---|---|
| | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Year 1** | • Connect<br>• Digital Literacy<br>• Information T | • Communicate<br>• Connect<br>• Digital Literacy | • Connect<br>• Communicate | • Collect<br>• Information T<br>• Alan Turing & Ada Lovelace | • Computer Science<br>• Code | • Computer Science<br>• Code |
| **Year 2** | • Connect<br>• Digital Literacy<br>• Information T | • Communicate<br>• Connect<br>• Digital Literacy | • Connect<br>• Communicate | • Collect<br>• Information T | • Computer Science<br>• Code | • Computer Science<br>• Code<br>• Tim Berners Lee |
| **Year 3** | • Connect<br>• Digital Literacy/ IT<br>Steve Jobs | • Communicate<br>• Connect<br>• Digital Literacy | • Connect<br>• Communicate | • Collect<br>• Information T | • Computer Science<br>• Code | • Computer Science<br>• Code |
| **Year 4** | • Connect<br>• Digital Literacy<br>• Information T | • Communicate<br>• Connect<br>• Digital Literacy | • Connect<br>• Communicate | • Collect<br>• Information T | • Computer Science<br>• Code<br>• Bill Gates | • Computer Science<br>• Code |
| **Year 5** | • Computer Science<br>• Information T<br>• Digital Literacy | • Computer Science/ IT<br>• Digital Literacy<br>• Charles Babbage | • Collect/ Computer Sci<br>• Connect/ IT<br>• Digital Literacy | • Collect<br>• Computer Science / IT<br>• Digital Literacy | • Information T<br>• Digital Literacy<br>• Code | • Information T<br>• Digital Literacy<br>• Code / Collect |
| **Year 6** | • Communicate<br>• Connect / Information T<br>• Digital Literacy | • Computer Science IT<br>• Digital Literacy<br>• Tommy Flowers | • Communicate<br>• Computer Science/Code<br>• Digital Literacy / IT | • Collect<br>• Information T<br>• Digital Literacy | • Computer Science / IT<br>• Digital Literacy/ Code<br>• Guido Van Rossum | • Code / IT<br>• Digital Literacy<br>• Computer Science |

To meet the aim of delivering this comprehensive set of substantive and disciplinary concepts, Garswood follow a combination of Project Evolve, EfaCW, iLearn2 and Teach Computing, these are outlined below in the following Curriculum Maps and then localised further into a set of hyperlinked sequences.

## EYFS Acorns, Oaks, Rec

**Understanding the World – Technology**

- listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. (EYS Framework - Understanding the World)
- Use Beebots, computers and tablets to independently complete a simple program e.g. direct Beebots, basic coding
- Uses computers and tablets to independently interact with age-appropriate computer software.

**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

**Role of adult:**

- Support and extend the skills children develop as they become familiar with simple equipment, such as twisting or turning a knob.
- Draw young children's attention to pieces of apparatus they see or that they use with adult supervision.
- When out in the locality, ask children to help to press the button at the pelican crossing, or speak into an intercom to tell somebody you are there.
- In CP, pupils can explore how programmable devices work, such as washing machines, mobile phones, etc. Model this technology, pretending to send messages across the world to people we know, giving an opportunity to talk about how devices are connected and how to stay safe on the internet.
- Help pupils develop an understanding that computers in their school are connected together and to computers in the outside world.
- Encourage children to speculate on the reasons why things happen or how things work.
- Support children to coordinate actions to use technology, for example, call a telephone number.
- Provide a range of materials and objects to play with that work in different ways for different purposes, for example, egg whisk, torch, other household implements, pulleys, construction kits and tablets.
- Provide a range of programmable toys, as well as equipment involving computing, such as computers.

## EYFS Reception

Sequenced across Nursery Acorns and Oaks and Reception the EYFS curriculum has been formed from the statement of the statutory educational programme of Knowledge and Understanding of the World which states "listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. (EYS Framework - Understanding the World)"

**EYFS - Precomputing skills:** The skills and experiences taught below will feed into the National Curriculum objectives the children will encounter in KS1. They will give them the necessary knowledge and processes to generate the first steps on the progressional ladder towards the National Curriculum computing end points.

| | | | | | |
|---|---|---|---|---|---|
| They can put 2 objects or events in order. They begin to show an understanding of time. They can experience various sources (like photographs and videos that are set in or about the past and comment on how things were different or the same to the present. – **preprogramming and coding** | To know places represented in drawings – make simple maps to represent our journeys. Identify simple types of buildings and places around me and know their specials features. Mark them on our simple maps. Follow our map and talk about it as we walk. – **pre algorithmic language and sequencing** | Exploring Seasons and Change – Winter and colder weather. To learn that some animals hibernate over the wintertime;. To learn that night-time becomes longer over the wintertime – **pre data logging and collecting of data** | They can compare modern and old objects. Show children a selection of toys from the past and compare to toys they have now. They begin to make accurate comparisons between modern and old objects. - **Pre digital literacy and technology from the past** | They can talk about some features of the fire service, police service and health service today and how they used to be different in the past – link back to visit to transport museum. They know how the police, fire and health services help us. They can talk about how school was different in the past. - **Pre technology in the world around us and Computer Science** | Magnets being attracted to some materials and not others. That some objects are able to float whilst others sink. That most objects will fall to the ground when they are dropped. That some things need power (e.g. batteries, plugging them in) to make them work. - **Pre Information technology and how technology works through electronic devices** |

| Key Knowledge | Key Vocabulary |
|---|---|
| Turning on or off basic technology within their own house, operating simple, Sequences of basic routines in the house, how technology is involved in their live. | Computer, tablet, camera, remote control, cd player, laptop, keyboard, mouse Mouse, keyboard, Beebot, pc, tablet, laptop, camera, mobile phone, printer, interactive whiteboard, app, icon, double-click, shut-down |

| KS1 | Using Technology (IT) *Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital* | Algorithms (IT) *Pupils should be taught to understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions* | Uses of IT beyond School (IT) *Pupils should be taught to recognise common uses of information technology beyond school* | Create Programs (CS) *Pupils should be taught to create and debug simple programs* | Safe Use (DL) *Pupils should be taught to 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* | Reasoning (IT) *Pupils should be taught to use logical reasoning to predict the behaviour of simple programs* |
|---|---|---|---|---|---|---|
| | **Term 1** | | **Term 2** | | **Term 3** | |
| **Year 1** | **Mouse, keyboard and images** Mouse and keyboard skills | **Spot a digital pattern** Digital Art | **What is an Algorithm?** Introduce Programming | **Music for Lovelace and Turing** Music Creation | **Decisions, decisions** E safety | **Text and Images** Text and Images |
| | **KS1 Vocabulary:** Algorithm, Implemented, Executed, Decomposition, Sequences, Repetition, Program, Instructions, Debug, Predict, logical reasoning, technology, Create, Organise, store, manipulate, retrieve, digital content, personal information, Private, Internet | | | | T Transferable vocabulary | S Specific theme vocabulary |
| **Sticky Knowledge skills** | • Move the mouse or trackpad and left click to select an object.<br>• Drag and drop with mouse or trackpad to move objects around the screen.<br>• Use double click or double tap.<br>• Find letters or numbers on keyboard.<br>• 5. Begin touch typing with home row keys. | • Change the colour of individual pixels to accurately re-create basic artwork.<br>• Make changes where required. Change the colour of individual pixels to accurately re-create detailed artwork.<br>• Use custom colours to make digital art your own.<br>• Use zoom controls to help fill small shapes. | • Place instructions in the correct order to make something work.<br>• Use direction arrows to move an on-screen object<br>• Predict a route and sequence direction commands.<br>• Predict a route and sequence distance commands to program an on-screen object.<br>• Predict & sequence movement and pen commands to program drawing<br>• Sequence code blocks and execute blocks to write a program. | • Understand the advantages of making music on a computer.<br>• Understand that different instruments make their own sound and that they can be in groups<br>• Create a rhythm using a pattern of beats<br>• Create digital sounds using patterns and shapes<br>• Create a simple melody using patterns and adjust tempo | • Understand what the internet is and how people use it.<br>• Understand what personal information is and why we keep personal information private.<br>• Why do websites want personal information?<br>• Identify where to go for help and support when concerned.<br>• What to do if something upsets us online<br>• Why is it important to be responsible on the internet? | • Change the background colour of a page<br>• Add, resize and position images on a page.<br>• Type and position text on a page, if possible, using capital letters and punctuation.<br>• Label pictures with text.<br>• Use word-banks for writing sentences about pictures. |
| **LEP** Hinterland knowledge | To know how to move the cursor to the correct place and left click an object.<br>To know how to click and drag<br>To know how to Use a physical keyboard to find a specific letter on the keyboard | To know how to use lines and fill tools. To know how to add a variety of shapes (outlines and fill) and label them with text<br>To know how to select, copy and paste to duplicate elements to improve accuracy and speed. | To know and understand what algorithms are<br>To know programs, execute by following precise and unambiguous instructions.<br>To know how to use logical reasoning to predict simple programs. | To know how to create a song bank and experiment with tempo.<br>To know about the lives and main achievements of Ada Lovelace and Alan Turing.<br>To know how to make music with code music and download | To know and understand what is meant by a safe and unsafe decision online.<br>To know how to keep personal information private.<br>To know and discuss a range of online scenarios and offer advice. | To know how to add and resize images into a program.<br>To know how to add text<br>To know about the lives of significant individuals in the past who have contributed to computing.<br>To know how to use technology to create and manipulate content |
| **NC obj** | use logical reasoning to predict the behaviour of simple programs | Use technology purposefully to create, organise and manipulate digital content. | Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. Create/ debug simple programs. | use technology purposefully to create, organise, store, manipulate and retrieve digital content | use technology safely and respectfully, keeping personal information private; | Use technology purposefully to create, organise, store, manipulate and retrieve digital content. |
| **Vocab** | mouse, keyboard, scroll, cursor, left button, scroll wheel, home row | pixels, grid, fill, check, custom colours, zoom | Algorithm, sequence, predict, execute, debug | rhythm, melody, tempo | personal information, sharing, permission, report, trust, respect | add, move, resize, icon, image, sticker, drag |

**Y1/2 Skills Progression**

| | Text and Multimedia | Digital Images | Sound | Communicate | E safety | Algorithms | Handling Info | Modelling simulations | Data Logging | Technology | Networks | The Internet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **IT** | | | | | | | | | | | | |
| **CS** | Work with others and with support to contribute to a digital class resource which includes text, graphic and sound.<br>Generate their own work, (with help where appropriate with multimedia) combining text, graphics and sound.<br>Save and retrieve and edit their work. | Use a range of simple tools in a paint package / image manipulation software to create / modify a picture.<br>Use a range of tools in a paint package / image manipulation software to create / modify a picture to communicate an idea.<br>Create a simple animation to tell a story. | Chose suitable sounds from a bank to express their ideas.<br>Record short speech.<br>Compose music from icons.<br>Produce a simple presentation incorporating sounds the children have captured, or created. | Contribute ideas to a class email to another class / school etc.<br>Work collaboratively by email to share and request information of another class or story character. | As a class exercise children explore information from a variety of sources (electronic, paper based, observations of the world around them, etc.).<br>They show an awareness of different forms of information<br>Children use a search engine to find specific relevant information to use in a presentation for a topic.<br>They save and retrieve their work. | Control simple everyday devices to make them produce different outcomes.<br>Control a device, on and off screen, making predictions about the effect their programming will have.<br>Children can plan ahead. | As a class or individually with support, children use a simple pictogram or painting program to develop simple graphical awareness / one to one correspondence.<br>Use a graphing package to collect, organise and classify data, selecting appropriate tools to create a graph and answer questions.<br>Enter information into a simple branching database, database or word processor and use it to answer questions.<br>They save, retrieve and edit their work. | Make simple choices to control a simple simulation program.<br>Children are able to play an adventure game and use a simple simulation, making choices and observing the results.<br>Their conversation shows they understand that computers are good at replicating real life events and allowing them to explore contexts that are otherwise not possible. | | Show an awareness of the range of devices and tools they encounter in everyday life<br>Show an awareness of a range of inputs to a computer (IWB, mouse touch screen, microphone, keyboard, etc) | Show an awareness that what they create on a computer or tablet device can be shown to others via another device (e.g. printer, projector, Apple TV)<br>Begin to show an awareness that computers can be linked to share resources | Use websites and demonstrate an awareness of how to manage their journey around them (e.g. using the back/forward button, hyperlinks) |
| **DL** | | | | | | | | | | | | |

| KS1 | Using Technology (IT) *Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital* | Algorithms (IT) *Pupils should be taught to understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions* | Uses of IT beyond School (IT) *Pupils should be taught to recognise common uses of information technology beyond school* | Create Programs (CS) *Pupils should be taught to create and debug simple programs* | Safe Use (DL) *Pupils should be taught to 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* | Reasoning (IT) *Pupils should be taught to use logical reasoning to predict the behaviour of simple programs* |
|---|---|---|---|---|---|---|
| | **Term 1** | | **Term 2** | | **Term 3** | |
| **Year 2** | **Animation** Intro to animations | **Pictograms** Intro to data handling | **Creating an online ebook** E book Creation | **Scratch Jr.** Prog with Scratch | **Wonders of the Digital World** E safety | **Tim Berners Lee Technology** IT around us |
| | **Vocabulary:** Algorithm, Implemented, Executed, Decomposition, Sequences, Repetition, Program, Instructions, Debug, Predict, logical reasoning, technology, Create, Organise, store, manipulate, retrieve, digital content, personal information, Private, Internet | | | | **T** Transferable vocabulary | **S** Specific theme vocabulary |
| **Sticky Knowledge skills** | • Add a background and objects to a frame, including text.<br>• Copy/clone a frame and move objects to create an animation. Plus flip an object.<br>• Create screen-recording animation.<br>• Create stop-motion animation with photos. | • Understand what data is and collect it as a tally.<br>• Use software to label a pictogram and add data to each column.<br>• Edit a table with correct titles and numbers.<br>• Use software to create a bar chart/pie chart/line chart suitable for the data.<br>• Interpret a pictogram/bar chart/line chart. | • Add a book cover with title, author, colour and image.<br>• Add multiple pages based on a theme.<br>• Add text on different pages.<br>• Add images on different pages to match the theme/text.<br>• Add voice recordings to match the text and theme | • . Program movements. Program outputs for audio or text.<br>• Find errors in a program (debug).<br>• Program inputs (touch or clicking)<br>• Program selection/conditions (if statements) | • Understand what personal information is and why we keep personal information private.<br>• Understand why websites want personal information.<br>• Identify when and where to go for help when concerned.<br>• Understand the dangers of sharing photos online?<br>• Understand that people online are not always who they say they are.<br>• Understand how to trust information online.<br>• Learn to use the Internet responsibly.<br>• Understand why we should be respectful | • Recognise common uses of information technology beyond school<br>• Understand computers store and follow instructions.<br>• Spot digital technology in school or at home.<br>• Find a piece of computer equipment amongst day to day objects and choose the correct definition.<br>• Understand how different technology helps us. |
| **LEP** Hinterland knowledge | To know how to add a variety of shapes (outlines and fill) and label them<br>To know how to use select, copy and paste to duplicate elements to improve accuracy and speed.<br>To know how to use zoom tools to add more detail.<br>To know how to add and edit images<br>To know how to create an animation with multiple objects moving simultaneously. | To know how to collect data and present it as a pictogram<br>To know how to use the Charts within a tools package<br>To know how to add some items to a table and a quantity.<br>To know that different charts can be created<br>To know and understand how different charts are used for presenting the results | To know how to design their own book based on research<br>To know how to create their blog design online.<br>To know how to develop a number of digital skills to use with other programs.<br>To know how to blend together different forms of media<br>To know how to effectively make an ebook about a subject or topic. | To know what algorithms are<br>To know that programs execute by following precise and unambiguous instructions.<br>To know how to write simple programs and use logical reasoning to predict simple programs.<br>To know how to program movements using loops (repetition)<br>To know how to find errors in a program (debug) | To know how to explore and try out various uses of the online world.<br>To know how to use technology safely and respectfully, keeping personal information private.<br>To know how to Identify any rules that help them to use the online world positively and responsibly | To know Tim Berners-Lee and learn about his invention of the World Wide Web.<br>To know how to explore online children's book review sites and identify features they do and don't like.<br>To know common uses of information technology beyond school<br>To know digital technology in school<br>To know how to define the basic pieces of computer equipment. |
| **NC obj** | Use technology purposefully to create, organise, store, manipulate and retrieve digital content | Use technology purposefully to create, organise, store, manipulate and retrieve digital content. | Use technology purposefully to create, organise, store, manipulate and retrieve digital content. | Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.<br>Create and debug simple programs.<br>Use logical reasoning to predict the behaviour of simple programs. | use technology safely and respectfully, keeping personal information private; | Recognise common uses of information technology beyond school. |
| **Vocab** | frame, clone, onion skin, frame rate | table, pie chart, pictogram, bar chart | fill, images, record, delete, new page, share | outputs, loops, inputs, selection, execute, debug | personal information, sharing, permission, report, trust, respect | miniprocessor, analogue, digital |

| Y1/2 Skills Progression | Text and Multimedia | Digital Images | Sound | Communicate | E safety | Algorithms | Handling Info | Modelling simulations | Data Logging | Technology | Networks | The Internet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IT | Work with others and with support to contribute to a digital class resource which includes text, graphic and sound. Generate their own work, (with help where appropriate with multimedia) combining text, graphics and sound. Save and retrieve and edit their work. | Use a range of simple tools in a paint package / image manipulation software to create / modify a picture.<br>Use a range of tools in a paint package / image manipulation software to create / modify a picture to communicate an idea.<br>Create a simple animation to tell a story. | Chose suitable sounds from a bank to express their ideas.<br>Record short speech. Compose music from icons.<br>Produce a simple presentation incorporating sounds the children have captured, or created. | Contribute ideas to a class email to another class / school etc.<br>Work collaboratively by email to share and request information of another class or story character. | As a class exercise children explore information from a variety of sources (electronic, paper based, observations of the world around them, etc.).<br>They show an awareness of different forms of information Children use a search engine to find specific relevant information to use in a presentation for a topic.<br>They save and retrieve their work. | Control simple everyday devices to make them produce different outcomes. Control a device, on and off screen, making predictions about the effect their programming will have.<br>Children can plan ahead. | As a class or individually with support, children use a simple pictogram or painting program to develop simple graphical awareness / one to one correspondence.<br>Use a graphing package to collect, organise and classify data, selecting appropriate tools to create a graph and answer questions.<br>Enter information into a simple branching database, database or word processor and use it to answer questions.<br>They save, retrieve and edit their work. | Make simple choices to control a simple simulation program.<br>Children are able to play an adventure game and use a simple simulation, making choices and observing the results.<br>Their conversation shows they understand that computers are good at replicating real life events and allowing them to explore contexts that are otherwise not possible. | | Show an awareness of the range of devices and tools they encounter in everyday life<br>Show an awareness of a range of inputs to a computer (IWB, mouse touch screen, microphone, keyboard, etc) | Show an awareness that what they create on a computer or tablet device can be shown to others via another device (e.g. printer, projector, Apple TV)<br>Begin to show an awareness that computers can be linked to share resources | Use websites and demonstrate an awareness of how to manage their journey around them (e.g. using the back/forward button, hyperlinks) |
| CS | | | | | | | | | | | | |
| DL | | | | | | | | | | | | |

| KS2 | Create programs (IT) | Develop programs (CS) | Reasoning (IT) | Networks (CS) | Search engines (IT) | Using programs (IT) | Safe use (DL) |
|---|---|---|---|---|---|---|---|
| | *Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts* | *Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output* | *Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs* | *Pupils should be taught to 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* | *Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content* | *Pupils should be taught to 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* | *Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact* |

| | Term 1 | | Term 2 | | Term 3 | |
|---|---|---|---|---|---|---|
| Year 3 | Digital Storyboard Steve Jobs<br>Comic Creations | Gaming online Friends and Privacy<br>E safety | Perfect editing<br>Doc, editing and creation | Digital art<br>Digital Art | Scratch Tunes<br>Programming in Scratch | 3D Creations<br>3D Design |
| | **Vocabulary:** (KS1 Vocabulary as above), Algorithm, Decomposition, Sequences, Repetition, Selection, Control, simulate, decompose, Select, Variables, detect, Correct, errors, computer networks, World Wide Web, Communication, Collaboration, Search Engine, Evaluating, Analyse, Present. | | | | T Transferable vocabulary | S Specific theme vocabulary |
| Sticky Knowledge skills | • Know the advantages of creating comics digitally (e.g speed of production)<br>• Know the different aspects of a comic; scenes, backgrounds, characters, narration, speech bubbles and stickers.<br>• Know how to add, resize and organise colour or picture backgrounds.<br>• Know how to add, resize, organise characters/objects to different panels.<br>• Know how to add narration using text and direct speech using speech bubbles. | • Understand what to do if something upsets you online.<br>• Understand why and how people can be nasty online.<br>• Describe the term 'sharing online' and why we need to get permission to share photos<br>• Understand why people pretend to be someone else online.<br>• Understand why we only talk to people we know in the real world,<br>• Understand why we should not always trust what we read online and how to check<br>• Understand how to protect digital content with a strong password.<br>• Understand the importance of being kind in the real world and also online | • Understand how word processing<br>• Know how to copy and paste text and images<br>• Know how to find and replace words<br>• Know how to format text for a purpose<br>• Know how to edit images inside documents<br>• Know how to add bullet points to make lists<br>• Know how experiment with keyboard shortcuts | • Use various lines and fill tools plus copy/paste and rotation to create pattern effects.<br>• Use shapes, fill, copy/paste, zoom and flip to create reflective symmetry effects.<br>• Use stamps, copy/paste, layers and multiple frames to create animated GIF computer graphics | • Know that code blocks in Scratch are different colours to help you find the blocks you need.<br>• Know that code blocks can be used to draw shapes by programming a pen trail and movements.<br>• Know that a repetition can be used to a make a program simpler.<br>• Know how to program an input, such as keyboard arrow keys to make a sprite move.<br>• Know how to find errors in a program and correct them. | • Understand and place 3D space on a grid to match another design.<br>• Re-create or design familiar 3D models using cubes, such as tables and chairs.<br>• Use chisel tool to improve and adapt models.<br>• Colour individual blocks or whole models.<br>• Apply 3D skills to your own design. |
| LEP Hinterland knowledge | To know how to browse and consider the current range of products by Apple<br>To know how to explore a challenge to create another product.<br>To know how to design, add and animate backgrounds.<br>To know how to design and add characters/objects.<br>To know how to design and add platforms.<br>To know how to demonstrate effective creation of different types of games (platform, flying, puzzle). | To understand the hidden costs of app usage and in-app purchasing.<br>To know when sharing of personal information is and is not safe.<br>To know and recognise privacy settings and the value of implementing them.<br>To know what information that is safe to share and what is not safe to share online<br>To identify a range of ways to report concerns about content and contact. | To know how to adapt a poem and edit and replace.<br>To know how to Copy and Paste text and images to create a text<br>To know how to find and replace suitable words including synonyms.<br>To know how to format text for a purpose<br>To know how to edit images inside documents<br>To know how to search the Internet for word use and ideas appropriately. | To know how to sample sounds and create several styles in an organised unit.<br>To know how to use lines and fill tools to make interesting patterns.<br>To know how to use select, copy and paste to duplicate elements to improve accuracy and speed.<br>To know how to flip and rotate elements to create interesting effects, such as symmetry.<br>To know how to use zoom tools to add more detail.<br>To know how to store and retrieve work | To know how to write a simple program with text outputs and movement<br>To know how to write a program with repetition<br>To know how to write programs using different inputs<br>To know how to program musical outputs<br>To know how to debug Programs<br>To know how to program conditions with data variables and operators<br>To know how to program random variables to add unpredictability. | To know how to edit video or audio files into a film or radio show.<br>To know how to use Comic creation to cover a wide range of genres.<br>To know how to add, resize and organise colour or picture backgrounds<br>To know how to add, resize, organise characters/objects to different panels.<br>To know how to add narration using text and direct speech using speech bubbles. |
| NC obj | 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. | use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact | 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 | 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. | Design, write and debug programs that accomplish specific goal, including simulating physical systems. Use sequence and repetition in programs; work with various forms of input. | 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. |
| Vocab | panel, narration, stickers ,scale, arrange, flip | personal information, sharing, permission, report, trust, respect | word processor, find and replace, format, text wrapping, bullet points, keyboard shortcuts | rotation, zoom, flip, symmetry, stamp, GIF | sprite, stage, sequence, debug, loop, repetition, input | 3D, rotate, zoom, grid, chisel, hammer, spray, bucket |

| Y3/4 Skills Progression | Text and Multimedia | Digital Images | Sound | Communicate | E safety | Algorithms | Handling Info | Modelling simulations | Data Logging | Technology | Networks | The Internet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IT | | | | | | | | | | | | |
| CS | Record and present information integrating a range of appropriate media combining text and graphics in printable form and sound and video for on-screen presentations which include hyperlinks. Begin to show an awareness of the intended audience and seek feed-back. | Manipulate digital images using a range of tools in appropriate software to convey a specific mood or idea. | Create a simple podcast, selecting and importing already existing music and sound effects as well as recording their own. | Begin to understand the need to abide by school e-safety rules. | Using another curriculum area as a starting point, children ask their own questions then use ICT sources to find answers, making use of search engines, an index, menu, hyperlinks as appropriate. Children use the information or resources they have found.<br>• Children talk about using ICT to find information / resources noting any frustrations and showing an emerging understanding of internet safety. | Children are able to type a short sequence of instructions and to plan ahead when programming devices on and off screen. | Children use a simple database (thstructure of which has been set up for them) to enter and save and save information on a given subject.<br>• They follow straight forward lines of enquiry to search their data for their own purposes.<br>• They talk about their experiences of using ICT to process data compared with other methods. | Use models and simulations to find things out and solve problems. Recognise that simulations are useful in widening experience beyond the classroom.<br>• Make simple use of a spreadsheet to store data and produce graphs. | Begin to use a data logger to sense physical data (sound, light, temperature). | Begin to show discernment in their use of computing devices and tools for a particular purpose and explain why their choice was made. | Show an understanding that their password is the key to accessing a personalised set of resources and files (e.g. My Documents).<br>• Show an awareness of where passwords are critical in everyday use (e.g. parents accessing bank details) | Show an awareness that not all the resources/tools they use are resident on the device they are using.<br>• Begin to show an understanding of URLs. |
| DL | | | | | | | | | | | | |

| KS2 | Create programs (IT) | Develop programs (CS) | Reasoning (IT) | Networks (CS) | Search engines (IT) | Using programs (IT) | Safe use (DL) |
|---|---|---|---|---|---|---|---|
| | *Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts* | *Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output* | *Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs* | *Pupils should be taught to 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* | *Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content* | *Pupils should be taught to 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* | *Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact* |

| | Term 1 | | Term 2 | | Term 3 | |
|---|---|---|---|---|---|---|
| Year 4 | Animation<br>Photo editing | Researching the net<br>The Internet | Passwords and E safety Experts<br>E safety | Mindset of Mindcraft<br>3D design<br>3D Design | Rising to Bill Gates Challenge<br>(Scratch)<br>Repetition in games | Data Handling<br>Data Handling |
| | **Vocabulary:** (KS1 Vocabulary as above), Algorithm, Decomposition, Sequences, Repetition, Selection, Control, simulate, decompose, Select, Variables, detect, Correct, errors, computer networks, World Wide Web, Communication, Collaboration, Search Engine, Evaluating, Analyse, Present. | | | | T Transferable vocabulary | S Specific theme vocabulary |
| Sticky Knowledge skills | • Understand that stop-motion is a series of pictures that are slightly different and they appear to move when played one after other.<br>• Know how to create a stop-motion video by duplicating slides that include backgrounds and shapes.<br>• Know how to use transition and animation effects in presentation software.<br>• Know how to animation individual parts of objects to create realistic animation.<br>• How to create animated pixel animation and save it as GIF file (short animation on a loop). | • Understand how search results are selected and ranked and show awareness of different strategies for finding specific information.<br>• Understand the features of an Internet Browser.<br>• Use search technologies (different websites) to find specific pieces of information.<br>• Reference the correct source of information.<br>• Be discerning in evaluating digital content.<br>• Check the internet for fake news by cross-referencing facts. | • Understand what to do if something upsets you online.<br>• Understand why and how people can be nasty online.<br>• Describe the term 'sharing online' and why we need to get permission to share photos<br>• Understand why people pretend to be someone else online.<br>• Understand why we only talk to people we know in the real world,<br>• Understand why we should not always trust what we read online and how to check<br>• Understand how to protect digital content with a strong password.<br>• Understand the importance of being kind in the real world and also online | • Understand 3D spacial awareness.<br>• Add 3D shapes, resize, adjust height, duplicate and use the different perspective<br>• Re-create different types of buildings using 3D shapes.<br>• Create roads/paths by adjusting the height of 3D shapes.<br>• Add windows and door shapes. | • Know that sprites can be controlled in different ways using keyboard or touch screen inputs.<br>• Know that sprites can be programmed to sense other sprites or colours then make decisions. (Eg, a car sprite could win the game if it touches a blue finish line or go back to start if it touches the green off the track.)<br>• Know how to program variables, including data variable that can used to add a scoring system. | • Know how to change appearance of cells in a spreadsheet (fill colour and border) then add and align text<br>• Know how to Find and add data to a spreadsheet, resize cells and use the software to create a suitable chart with a title |
| LEP<br>Hinterland knowledge | To know how to spend time filming a stop-motion animation<br>To know how to add and edit backgrounds and shapes in PowerPoint for a purpose.<br>To know how to duplicate slides and move objects to create a stop-motion animation using frames.<br>To know how to use pulse animations in PowerPoint and adjust speed and loop.<br>Clone frames to create stop-motion animation. | To know and understand what a slogan is<br>To know how to plan for and film a short TED talk type video<br>To know how to appreciate how search results are selected and ranked.<br>To know how to use search technologies<br>To know how to find specific pieces of information<br>To know how to reference the correct source of information<br>To know how to check the internet for fake news by cross-referencing facts | To know how to recognise acceptable and unacceptable behaviour.<br>To know how to identify a range of ways to report concerns about content and contact<br>To know and understand the importance of keeping passwords safe.<br>To know and understand how to generate effective and secure passwords.<br>To know how to explore a range of online safety issues to consolidate learning. | To know how to build structures from cubed blocks according to specific instructions.<br>To know how to use Minecraft to familiarise themselves with 3D modelling.<br>To know how to explore Sketchup and begin to familiarise themselves with specific feature.<br>To know how to use 3D Computer Aided Design software to build a 3D town/village using 3D shapes. | To know the extent of the philanthropic work undertaken by Bill Gates.<br>To know and understand the contribution he and Microsoft have made to the world<br>To know how to add conditions and sensing<br>To know how to debug Programs<br>To know how to program conditions with data variables and operators<br>To know how to program random variables to add unpredictability<br>To know how to program broadcast commands between sprites | To know how to manipulate data in their spreadsheet<br>To know how to 'Ask' their database questions to manipulate<br>To know how to select cells and resize them, fill with colour and add borders, non-adjacent cells plus resize multiple cell widths<br>To know how to use formulae to find totals, averages and maximum/minimum numbers<br>To know how to select the correct chart type to present data, answer 'what if?...' questions |
| NC obj | Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals. | Use search technologies effectively, appreciate how results are selected and ranked, and 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 | Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals. | Design, write and debug programs that accomplish specific goals. Use sequence, selection, and repetition in programs; work with various forms of input and output. | Select, use and combine a variety of software (including internet services). Collecting, analysing, evaluating and presenting data and information. |
| Vocab | frame, clone, onion skin, timeline, frame rate, transition, GIF | internet browser, search engine, web address, WWW, ranking | personal information, sharing, permission, report, trust, respect | 3D, work plane, zoom, perspective, orthographic | input, selection, sensing, variables, debug | spreadsheet, cell, pie chart, bar chart, line graph |

| Y3/4 Skills Progression | Text and Multimedia | Digital Images | Sound | Communicate | E safety | Algorithms | Handling Info | Modelling simulations | Data Logging | Technology | Networks | The Internet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IT | Record and present information integrating a range of appropriate media combining text and graphics in printable form and sound and video for on-screen presentations which include hyperlinks. Begin to show an awareness of the intended audience and seek feed-back. | Manipulate digital images using a range of tools in appropriate software to convey a specific mood or idea. | Create a simple podcast, selecting and importing already existing music and sound effects as well as recording their own. | Begin to understand the need to abide by school e-safety rules. | Using another curriculum area as a starting point, children ask their own questions then use ICT sources to find answers, making use of search engines, an index, menu, hyperlinks as appropriate. Children use the information or resources they have found.<br>Children talk about using ICT to find information / resources noting any frustrations and showing an emerging understanding of internet safety. | Children are able to type a short sequence of instructions and to plan ahead when programming devices on and off screen. | Children use a simple database (thstructure of which has been set up for them) to enter and save and save information on a given subject.<br>They follow straight forward lines of enquiry to search their data for their own purposes.<br>They talk about their experiences of using ICT to process data compared with other methods. | Use models and simulations to find things out and solve problems. Recognise that simulations are useful in widening experience beyond the classroom.<br>Make simple use of a spreadsheet to store data and produce graphs. | Begin to use a data logger to sense physical data (sound, light, temperature). | Begin to show discernment in their use of computing devices and tools for a particular purpose and explain why their choice was made. | Show an understanding that their password is the key to accessing a personalised set of resources and files (e.g. My Documents).<br>Show an awareness of where passwords are critical in everyday use (e.g. parents accessing bank details) | Show an awareness that not all the resources/tools they use are resident on the device they are using.<br>Begin to show an understanding of URLs. |
| CS | | | | | | | | | | | | |
| DL | | | | | | | | | | | | |

| KS2 | Create programs (IT) | Develop programs (CS) | Reasoning (IT) | Networks (CS) | Search engines (IT) | Using programs (IT) | Safe use (DL) |
|---|---|---|---|---|---|---|---|
| | *Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts* | *Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output* | *Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs* | *Pupils should be taught to 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* | *Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content* | *Pupils should be taught to 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* | *Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact* |

| | Term 1 | | Term 2 | | Term 3 | |
|---|---|---|---|---|---|---|
| Year 5 | Coding Text based programming | Networks and inputs Networks and WWW | Ebook Challenge E Book Creation | Data analysis Data Handling | Microbit Mayhem Physical Devices | Cyber Bullying and Reporting Sharing information |
| **Vocabulary:** (KS1 Vocabulary as above), Algorithm, Decomposition, Sequences, Repetition, Selection, Control, simulate, decompose, Select, Variables, detect, Correct, errors, computer networks, World Wide Web, Communication, Collaboration, Search Engine, Evaluating, Analyse, Present. | | | | | T Transferable vocabulary | S Specific theme vocabulary |
| **Sticky Knowledge skills** | • Change the variables of text-based commands.<br>• Write text-based commands accurately and use fill effects, stamps and functions.<br>• Write text commands/functions to program keyboard inputs in a game.<br>• Programming a Logo turtle to move and use pen<br>• Use co-ordinates in with a Logo turtle<br>• Print labels in Logo.<br>• Program a loop (repetition) and shapes in Logo Turtle.<br>• Program colours in Logo turtle.<br>• Program variables in Logo turtle. | • Understand Computer Networks, Internet, Cloud Computing and Bluetooth and how they help us.<br>• What is email and how can we use it safely?<br>• Understand how and why we collaborate online (including blogging). | • Add page colour and style<br>• Add, position and format text on different pages<br>• Add and position images<br>• Add audio, including hiding it behind an object.<br>• Add hyperlinks to text and images<br>• Search for shapes<br>• Lock and arrange shapes | • Select and use non-adjacent cells plus resize multiple cell widths and copy/paste cells<br>• Find data and create a spreadsheet to suit it.<br>• Use formulae to find totals, averages and maximum/minimum numbers<br>• Search a database for specific information. | • Understand that computers use physical inputs and outputs and give examples.<br>• Program physical inputs, outputs (e.g program LED lights), loops and random variables (Microbit activities).<br>• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. | • Understand to keep personal information private.<br>• Respect and protect against online bullies.<br>• Understand the consequences of sharing photo/videos online.<br>• Understand the term digital footprint.<br>• Check online content is trustworthy.<br>• Understand how, where and who can we report concerns we have to.<br>• Understand the pitfalls of in-app purchases.<br>• Understand how and why companies/people track our online behaviour and how we can prevent it.<br>• Understand how clones, trojans and hackers can steal your online identity. |
| **LEP** Hinterland knowledge | To know how to write a simple program with text outputs and movement using Scratch (LA) Art Kano (Other)<br>To know how to write a program with repetition and different inputs<br>To know how to add conditions and sensing to a program<br>To know how to work with lists to create random actions and program random variables to add unpredictability.<br>To know how to program broadcast commands between sprites | To know and understand computer networks, including the internet<br>To know how they can provide multiple services, such as the World Wide Web<br>To know what opportunities, they offer for communication and collaboration.<br>To know what is email and how can we use it safely<br>To know how to control physical systems (Physical inputs and outputs)<br>To know how to program conditions and random variables | To know how to respond to a challenge to design a short stop motion animation for young children.<br>To know how to make e books and understand how to add colour and style<br>To know how to add, position and format text on different pages<br>To know how to position images from web<br>To know how to add audio, including hiding it behind an object.<br>To know how to add hyperlinks to navigate | To know how to find and present data as a table and chart.<br>To know how to use formulae to find totals, averages and maximum/minimum numbers<br>To know how to use sensors to collect data over time, such as temp, light, humidity<br>To know how to record data to the computer and display them in a graph.<br>To know how to take readings and then describe, write and analyse what each graph is presenting. | To know how to adjust slide size to mimic a phone/tablet size.<br>To know how to add text and images to a slide.<br>To know how to add icons and text to use as navigation.<br>To know how to duplicate slides to create multiple pages of the app.<br>To know how to create hyperlinks to create navigation.<br>To understand that computers use physical inputs and outputs and give examples.<br>To know how to program physical inputs, outputs (e.g program LED lights) and random variables.<br>To know how to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. | To know and understand what is meant by cyber-bullying and explore the similarities and differences to bullying.<br>To know how to identify online dangers, including people are not who they say they are and the dangers they pose.<br>To know what to include when creating online activities such as blogging, podcasting and email.<br>To know what is their digital footprint and what they can do about it |
| **NC obj** | Use sequence and repetition in programs; work with variables. Correct errors in 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. | 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. | Select, use and combine a variety of software (including internet services). Collecting, analysing, evaluating and presenting data and information. | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. 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. |
| **Vocab** | Java script, logo, function, loops, repetition, variables | Network, input, switch, server, printer, wireless, wired | Page shape, inspector, hyperlinks, content, preview | Spreadsheet, call, formulae, data base, record, field, sort | Microbit, output, input, accelerometer, processor | personal information, sharing, digital footprint, report, trust, respect, in app purchasing |

| Y5/6 Skills Progression | Text and Multimeda | Digital Images | Sound | Communicate | E safety | Algorithms | Handling Info | Modelling simulations | Data Logging | Technology | Networks | The Internet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IT | Multimedia work shows restrained use of effects that help to convey meaning rather than impress. | Use images that they have sourced / captured / manipulated as part of a bigger project (eg presentation or document). | Create and share more sophisticated podcasts and consider the effect that their podcasts will have on the audience. | Share ICT work they have done electronically by email, VLE, or uploading to authorised sites.<br>Where possible seek and respond to feedback. | Independently and with due regard for safety, search the internet using a variety of techniques to find a range of information and resources on a specific topic.<br>Use appropriate methods to validate information and check for bias and accuracy.<br>Repurpose and make appropriate use of selected resources for a given audiences, acknowledging material used where appropriate. | Independently create sequences of commands to control devices in response to sensing (i.e. use inputs as well as outputs).<br>Design, build, test, evaluate and modify the system; ensuring that it is fit for purpose. | Independently solve a problem by planning and carrying out data collection, by organising and analysing data involving complex searches using a database, and by drawing conclusions and presenting findings.<br>The need for accuracy is demonstrated and strategies for spotting implausible data are evident.<br>Children should be able to talk about issues relating to data protection and the need for data security in the world at large (eg health, police databases). | Set up and use their own spreadsheet, which contains formulae to investigate mathematical models. Ask "what if ..." questions and change variable in their model.<br>Understand the need for accuracy when creating formulae and check regularly for mistakes, by questioning results.<br>Relate their use of spreadsheets to model situations to the wider world. | Children are able to identify their own opportunities for data logging and carry out their own experiments.<br>They check and question results and are able to spot trends in data and identify when problems may have occurred. | Evaluate the tools available to them including any that are unfamiliar or new and use them to solve problems.<br>Demonstrate an awareness of the appropriateness of outcomes depending on choices regarding tools and devices. | Show an understanding of how filtering and monitoring tools effect their use of the school network and Internet and compare this with their experience of access outside school. | Use collaborative tools and e-mail showing a sensitivity for this type of remote collaboration and communication |
| CS | | | | | | | | | | | | |
| DL | | | | | | | | | | | | |

| KS2 | Create programs (IT) | Develop programs (CS) | Reasoning (IT) | Networks (CS) | Search engines (IT) | Using programs (IT) | Safe use (DL) |
|---|---|---|---|---|---|---|---|
| | *Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts* | *Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output* | *Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs* | *Pupils should be taught to 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* | *Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content* | *Pupils should be taught to 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* | *Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact* |

| | Term 1 | | Term 2 | | Term 3 | |
|---|---|---|---|---|---|---|
| Year 6 | Virtual Reality<br>Virtual Reality | History and Binary<br>Past, present, future, binary | The Code Behind the Game<br>Web Design | Emoji's, text talk and Phishing<br>E safety | Programming with Python<br>Programming in Python | Image editing and Presenting<br>Graphic Design |
| **Vocabulary:** (KS1 Vocabulary as above), Algorithm, Decomposition, Sequences, Repetition, Selection, Control, simulate, decompose, Select, Variables, detect, Correct, errors, computer networks, World Wide Web, Communication, Collaboration, Search Engine, Evaluating, Analyse, Present. | | | | | T Transferable vocabulary | S Specific theme vocabulary |
| **Sticky Knowledge skills** | • Understand what virtual reality is and how it can be used to help people.<br>• Add, move and resize objects in a virtual reality environment<br>• Animate objects for realism.<br>• Use code blocks to add movement (with grouping) and interactions (conditions).<br>• Create multiple scenes of VR environments | • Show awareness of how computers and digital technology helps us today.<br>• Understand how technology has changed over time and represent it as an interactive timeline.<br>• Understand the impact (positive/negative) technological changes have on society.<br>• Predict how technology will change in the future.<br>• Understand why computers/electronics use binary.<br>• Match a sequence of binary code to create digital art.<br>• To convert binary code to denary numbers (decimal numbers) and visa versa. | • Create a static homepage.<br>• Choose a suitable theme for your website.<br>• Change the site identity to a suitable title, tagline and website icon.<br>• Upload a suitable header and/or background image.<br>• Adjust the website sidebar and add suitable widgets.<br>• Add text and images to a page and edit them.<br>• Add multiple pages and edit the navigation, including sub-menus.<br>• Provide constructive feedback for your classmates' websites. | • Understand to keep personal information private.<br>• Respect and protect against online bullies.<br>• Understand the consequences of sharing photo/videos online.<br>• Understand the term digital footprint.<br>• Check online content is trustworthy.<br>• Understand how, where and who can we report concerns we have to.<br>• Understand the pitfalls of in-app purchases.<br>• Understand how and why companies/people track our online behaviour and how we can prevent it.<br>• Understand how clones, trojans and hackers can steal your online identity. | • Write basic python syntax<br>• Print text<br>• Use Python as a calculator<br>• Program loops to repeat text<br>• Program interactive inputs<br>• Find errors in a program (debugging)<br>• Program a trivia chatbot using 'send message' functions | • Add, adjust and fill shapes<br>• Group shapes to improve accuracy and speed<br>• Add and customise gradient effects<br>• Adjust transparency/opacity for a purpose<br>• Use a colour picker correctly<br>• Accurately rotate shapes |
| **LEP** Hinterland knowledge | To know how to create their own game using drag and drop programming.<br>To know what virtual reality is and how it can be used to help people.<br>To know how to add, move and resize objects in a virtual reality environment<br>To know how to animate objects for realism.<br>To know how to use code blocks to add movement (with grouping, conditions).<br>To know how to create multiple scenes of VR environments. | To know how to design and create digital content to accomplish goals<br>To know and understand the impact technological changes have on society.<br>To know how to predict how technology will change in the future.<br>To know and understand why computers/electronics use binary.<br>To know how to convert binary code to denary numbers (decimal numbers) and vice versa. | To know how to use and combine a variety of software (including internet services)<br>To know how to add and format text within a website.<br>To know how to organise sections and pages.<br>To know how to add and edit images.<br>To know how to include other features such as hyperlinks, buttons and files.<br>To know how to evaluate other websites and provide constructive feedback. | To know and consider the phrase 'Think before you send' and the possible impact of emojis and text-talk.<br>To know and identify the features and implications of a phishing email.<br>To know how to use the safer internet centre to explore the parameters of sharing images online.<br>To understand the consequences of sharing photo/videos online.<br>To know how to use the email simulator to explore vocabulary and safety through email. | To know how to program movements using Python Syntax<br>To know how to print text using Python<br>To know how to use Python as a calculator<br>To know how to program loops to repeat text<br>To know how to program interactive inputs<br>To know which programs contain various types of programming language, HTML, Java | To know how to edit a photo/image using an online editor including:<br>To know how to take and crop a screenshot and learn about ratios.<br>To know how to adjust the colours, brightness, contrast and filters.<br>To know how to add drawing and text layers.<br>To know and understand that content drives a presentation, not the other way round |
| **NC obj** | Design and create digital content to accomplish goals.<br>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. | Design and create digital content to accomplish goals.<br>Use search technologies effectively and be discerning in evaluating digital content. Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits. (Key Stage 3) | 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. | 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; solve problems by decomposing them into smaller parts.<br>Use sequence, selection, and repetition in programs; work with variables.<br>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.<br>Use a textual programming language to solve a variety of computational problems. (Key Stage 3) | Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals. |
| **Vocab** | Virtual Reality, Immersive, animate, scenes, grouping, interactions, conditions | Binary, mouse, apple, digital, email, windows, WWW, denary numbers, translate, convert | Word press, static page, theme, header, sidebar, widgets, navigation, domain name | personal information, sharing, digital footprint, report, trust, respect, in app purchasing | syntax, print, range, python | grouping, gradient, transparency, opacity, colour picker, arrange |

| Y5/6 Skills Progression | Text and Multimeda | Digital Images | Sound | Communicate | E safety | Algorithms | Handling Info | Modelling simulations | Data Logging | Technology | Networks | The Internet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IT | Multimedia work shows restrained use of effects that help to convey meaning rather than impress. | Use images that they have sourced / captured / manipulated as part of a bigger project (eg presentation or document). | Create and share more sophisticated podcasts and consider the effect that their podcasts will have on the audience. | Share ICT work they have done electronically by email, VLE, or uploading to authorised sites.<br>Where possible seek and respond to feedback. | Independently and with due regard for safety, search the internet using a variety of techniques to find a range of information and resources on a specific topic.<br>Use appropriate methods to validate information and check for bias and accuracy.<br>Repurpose and make appropriate use of selected resources for a given audiences, acknowledging material used where appropriate. | Independently create sequences of commands to control devices in response to sensing (i.e. use inputs as well as outputs).<br>Design, build, test, evaluate and modify the system; ensuring that it is fit for purpose. | Independently solve a problem by planning and carrying out data collection, by organising and analysing data involving complex searches using a database, and by drawing conclusions and presenting findings.<br>The need for accuracy is demonstrated and strategies for spotting implausible data are evident.<br>Children should be able to talk about issues relating to data protection and the need for data security in the world at large (eg health, police databases). | Set up and use their own spreadsheet, which contains formulae to investigate mathematical models. Ask "what if ..." questions and change variable in their model.<br>Understand the need for accuracy when creating formulae and check regularly for mistakes, by questioning results.<br>Relate their use of spreadsheets to model situations to the wider world. | Children are able to identify their own opportunities for data logging and carry out their own experiments.<br>They check and question results and are able to spot trends in data and identify when problems may have occurred. | Evaluate the tools available to them including any that are unfamiliar or new and use them to solve problems.<br>Demonstrate an awareness of the appropriateness of outcomes depending on choices regarding tools and devices. | Show an understanding of how filtering and monitoring tools affect their use of the school network and Internet and compare this with their experience of access outside school. | Use collaborative tools and e-mail showing a sensitivity for this type of remote collaboration and communication |
| CS | | | | | | | | | | | | |
| DL | | | | | | | | | | | | |

| Information Technology | | Computer Science | Digital Literacy | |
|---|---|---|---|---|
| Word processing<br>Data Handling<br>Presentation<br>Animation<br>Video creation | Photography<br>Digital Art<br>Augmented reality<br>Virtual reality<br>Sound creation | Computational thinking<br>Programming<br>Networks | Self-image and identity<br>Online<br>Relationships<br>Online bullying<br>Online reputation | Managing online behaviour<br>Health wellbeing and lifestyle<br>Privacy and security<br>Copyright and ownership |

## 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.

## How to use the Curriculum Map:

The above titles for each half term are linked with Various online resource hubs (see below) and in a lot of cases link with the history/geography or science topic for the year group half term, providing an associated computing link. Please use the National Curriculum, Focus statements, linked sequences and 'sticky knowledge' to back up these topic links in each case. These websites below provide vital resources and further information with regards to each objective.

www.llearn2.co.uk
Login: lesley.moon@sthelens.org.uk
Password:

https://teachcomputing.org
Individual subscription information

https://projectevolve.co.uk/
Individual subscription information

www.twinkl.co.uk
Individual subscription information

### Additional online resource hubs

www.stem.org.uk/primary-computing-resources

https://www.bbc.co.uk/bitesize/subjects/zyhbwmn

www.icompute-uk.com/

code.org

www.kapowprimary.com

www.barefootcomputing.org
Individual subscription information

### Important people/events to cover in assemblies

**Alan Turing**
**Ada Lovelace**
**Steve Jobs**
**Bill Gates**
**Charles Babbage**
**James Gosling**
**Philip Don Estridge**
**Mark Zuckerberg**
**Grace Hopper**