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	Implementation	Impact
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.	**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.	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 • Digital Literacy • Information T	• Communicate • Connect • Digital Literacy	• Connect • Communicate	• Collect • Information T • Alan Turing & Ada Lovelace	• Computer Science • Code	• Computer Science • Code
Year 2	• Connect • Digital Literacy • Information T	• Communicate • Connect • Digital Literacy	• Connect • Communicate	• Collect • Information T	• Computer Science • Code	• Computer Science • Code • Tim Berners Lee
Year 3	• Connect • Digital Literacy/ IT Steve Jobs	• Communicate • Connect • Digital Literacy	• Connect • Communicate	• Collect • Information T	• Computer Science • Code	• Computer Science • Code
Year 4	• Connect • Digital Literacy • Information T	• Communicate • Connect • Digital Literacy	• Connect • Communicate	• Collect • Information T	• Computer Science • Code • Bill Gates	• Computer Science • Code
Year 5	• Computer Science • Information T • Digital Literacy	• Computer Science/ IT • Digital Literacy • Charles Babbage	• Collect/ Computer Sci • Connect/ IT • Digital Literacy	• Collect • Computer Science / IT • Digital Literacy	• Information T • Digital Literacy • Code	• Information T • Digital Literacy • Code / Collect
Year 6	• Communicate • Connect / Information T • Digital Literacy	• Computer Science IT • Digital Literacy • Tommy Flowers	• Communicate • Computer Science/Code • Digital Literacy / IT	• Collect • Information T • Digital Literacy	• Computer Science / IT • Digital Literacy/ Code • Guido Van Rossum	• Code / IT • Digital Literacy • 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	**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. E.g. Mathseeds **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	Sequenced across Nursery 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)	Algorithms (IT)	Uses of IT beyond School (IT)	Create Programs (CS)	Safe Use (DL)	Reasoning (IT)
Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital	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	Pupils should be taught to recognise common uses of information technology beyond school	Pupils should be taught to create and debug simple programs	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	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 — Technology around us	Can you spot a pattern? — Digital Painting	What is an Algorithm? — Moving a Robot	Music for Lovelace and Turing — Making Music	Decisions, decisions — Grouping data	Completing online labels — Digital Writing

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

To know how to move the cursor to the correct place and left click an object. To know how to click and drag 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 To know how to select, copy and paste to duplicate elements to improve accuracy and speed.	To know and understand what algorithms are To know programs, execute by following precise and unambiguous instructions. To know how to use logical reasoning to predict simple programs.	To know how to create a song bank and experiment with tempo. To know about the lives and main achievements of Ada Lovelace and Alan Turing. 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. To know how to keep personal information private. To know and discuss a range of online scenarios and offer advice.	To know how to add and resize images into a program. To know how to add text To know about the lives of significant individuals in the past who have contributed to computing. To know how to use technology to create and manipulate content.

LEP

1. Move cursor and left click to select. 2. Click and drag to move items. 3. Find letters on a keyboard and begin touch typing. Ilearn2 – Mouse and Keyboard skills writing Microsoft Word, PowerPoint	1. Use lines and fill tools to make interesting patterns. 2. Use a paint package 3. Open and save from within 4. Basic editing of the paint package Ilearn2 – Digital Art 2Paint, Google Paint	1. Understand sequence and algorithms. 2. Sequence instructions (commands) to achieve an objective. 3. Predict, write, execute, and debug a simple program. Ilearn2 – Introduce Programming Barefoot computing	1. Record a short speech 2. Use a sound bank 3. Create scales, chords, arpeggios, melodies and rhythm to build a song and experiment with tempo. Ilearn2 – Music Creation Web research, BBC Clips	1. Use technology safely and respectfully, keeping personal information private. 2. Explore information from a variety of sources 3. Show awareness of different forms of information Ilearn2 – E safety ThinkuKnow	1. Add and resize images. 2. Add text to label and describe image 3. Click on stated icons 4. Understand how to edit and retrieve. Ilearn2 – Text and Images Microsoft Word, PowerPoint

links

i learn 2	Teach comp	Online safety	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Online safety	i learn 2	Teach comp	Think u Know	i learn 2	Teach comp	Online safety

Vocab

T graphic, sound, label, image, paint, colour	T store, digital, content, Patterns, safety	T photograph, image, instructions, traffic lights.	T timeline, Record, speech, facts, song	T manipulate, , compose, retrieve, private, advice, decision	T organise, store, content, technology, label, word bank, creation
S Polaroid, negative, tablet, camera, photograph, APP, focus, text, zoom. Website, logic, mouse, program, click, play back, insert, crop, keyboard	S paint, fill, line, create, organise, icon,	S Digital, device, system, debug, programs, code a pillar, lightbox Algorithm, sequence, device, outcomes	S Scales, allegro, chords, rhythm, tempo, mixing, tracking Internet, dates, sound bank, chat box, download	S Storyboard, avator e safety, online, video, clip	S Famous people, international, icons, edit, retrieve manipulate, retrieve, digital, click, desktop, keyboard, eBook

Focus /NC

• use a website and a camera • record sound and play back • use logical reasoning to predict the behaviour of simple programs • create and debug simple programs	• create, store and retrieve digital content • can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems	• create a series of instructions and plan a journey for a programmable toy • understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	• use a website and a camera • record sound and play back • use logical reasoning to predict the behaviour of simple programs • create and debug simple programs	• use technology safely • keep personal information private • 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.	• create, store and retrieve digital content • can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems

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. 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. Use a range of tools in a paint package / image manipulation software to create / modify a picture to communicate an idea. Create a simple animation to tell a story.	Chose suitable sounds from a bank to express their ideas. Record short speech. Compose music from icons. Produce a simple presentation incorporating sounds the children have captured, or created.	Contribute ideas to a class email to another class / school etc. 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 us, etc.). 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. 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. 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. Use a graphing package to collect, organise and classify data, selecting appropriate tools to create a graph and answer questions. Enter information into a simple branching database, database or word processor and use it to answer questions.	Make simple choices to control a simple simulation program. Children are able to play an adventure game and use a simple simulation, making choices and observing the results. 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 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) 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** Pictograms	**Creating an online ebook** Digital Photography	**Scratch Jr.** Robot Algorithms	**Wonders of the Digital World** Intro to quizzes	**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	To know how to add a variety of shapes (outlines and fill) and label them To know how to use select, copy and paste to duplicate elements to improve accuracy and speed. To know how to use zoom tools to add more detail. To know how to add and edit images To know how to create an animation with multiple objects moving simultaneously.	To know how to collect data and present it as a pictogram To know how to use the Charts within a tools package To know how to add some items to a table and a quantity. To know that different charts can be created To know and understand how different charts are used for presenting the results	To know how to design their own book based on research To know how to create their blog design online. To know how to develop a number of digital skills to use with other programs. To know how to blend together different forms of media To know how to effectively make an ebook about a subject or topic.	To know what algorithms are To know that programs execute by following precise and unambiguous instructions. To know how to write simple programs and use logical reasoning to predict simple programs. To know how to program movements using loops (repetition) To know how to find errors in a program (debug)	To know how to explore and try out various uses of the online world. To know how to use technology safely and respectfully, keeping personal information private. 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. To know how to explore online children's book review sites and identify features they do and don't like. To know common uses of information technology beyond school To know digital technology in school To know how to define the basic pieces of computer equipment.
LEP	1. To know how to add a variety of shapes (outlines and fill) and label them with text. 2. Add a background and objects to a frame. 3. Copy/clone a frame and move objects to create an animation. 4. Create an animation with multiple objects moving simultaneously. Ilearn2 – *Introduction to Animation* 2animate, Barefoot computing	1. Label a pictogram and add data to each column. 2. Edit a table with correct titles and numbers to create a bar chart and pie chart. 3. Explain what a pictogram and bar chart shows. Ilearn2 – *Introduce data handling* Barefoot, icompute, 2 simple	1. Add a book cover with title, author, colour and image. 2. Add multiple pages based on a theme. 3. Add text on different pages. 4. Add images on different pages to match the theme/text. Ilearn2 – *ebook creation* Barefoot, icompute, animoto	1. Program movements using loops (repetition). 2. Program outputs for audio or text Use the 'wait' code appropriately. 3. Find errors in a program (debug). 4. Sequence code blocks with loops (repetition) to write a program to achieve a goal. Ilearn2 – *program with Scratch Jr* Barefoot, hour of code, icompute	1. Use technology safely and respectfully, keeping personal information private. 2. Identify 'safe' adults, who children can tell about online worries 3. Use and understand SMART Ilearn2 – *E safety* Barefoot, ThinkuKnow, Gooseberry planet	1. Spot digital technology in school. 2. Find a piece of computer equipment amongst day to day objects and choose the correct definition. 3.Identify the role of Tim Berners Lee in education Ilearn2 – *Recognise uses of IT* Barefoot, icompute, BBC clips

links	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Online Safety	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Online safety	i learn 2	Teach comp	Think u Know	i learn 2	Teach comp	Project Evolve

Vocab	T Background, flip, rotate, store, retrieve, shapes, frame	T image, manipulation, pictogram, data, table, charts, titles, bar chart	T review, design, book, topic, theme, text	T world, rules, loops, responsible, safety, private, wait, errors	T responsible, safety, private, World	T text, graphics, generate
	S symbol, problem solve, sequence, animation, effects Algorithm, add, edit, tools, save, fill, copy, paste, outlines	S Click, cursor, point, edit, change, compose, icons, cells, tools	S Blog, e book Media, audio, communication, input, program	S Online, program, repetition, output, input, audio, debug, attachments, e mail, code, sequence, block	S WWW, technology, SMART, Online, world, rules, e mail, digital	S save, retrieve multimedia, combine

Focus /NC	• understand that algorithms are used on digital devices • can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation	• know where to go for help if concerned. • 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.	• write a simple program and test it • know how technology is used in school and outside of school • recognise common uses of information technology beyond school	• Know where to go for help if concerned. • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• understand that programs require precise instructions • organise, retrieve and manipulate digital content • use technology purposefully to create, organise, store, manipulate and retrieve digital content	• predict what the outcome of a simple program will be (logical reasoning). • can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems

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. Use a range of tools in a paint package / image manipulation software to create / modify a picture to communicate an idea. ☐ Create a simple animation to tell a story.	Chose suitable sounds from a bank to express their ideas. ☐ Record short speech. Compose music from icons. ☐ Produce a simple presentation incorporating sounds the children have captured, or created.	Contribute ideas to a class email to another class / school etc. 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.). ☐ 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. ☐ 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. ☐ 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. Use a graphing package to collect, organise and classify data, selecting appropriate tools to create a graph and answer questions. ☐ Enter information into a simple branching database, database or word processor and use it to answer questions. ☐ They save, retrieve and edit their work.	Make simple choices to control a simple simulation program. Children are able to play an adventure game and use a simple simulation, making choices and observing the results. ☐ 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 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) 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)

KS2

	Create programs (IT)	Develop programs (CS)	Reasoning (IT)	Networks (CS)	Search engines (IT)	Using programs (IT)	Safe use (DL)
KS2	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

Solving Steve Jobs Problem — Connecting computers	Gaming online Friends and Privacy — Branching Databases	Perfect poetry — Desktop publishing	Digital art and music creation — Sequence in music	Scratch Tunes — Events and actions	Lecture – Comic Creations — Animation

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

To know how to browse and consider the current range of products by Apple
To know how to explore a challenge to create another product.
To know how to design, add and animate backgrounds.
To know how to design and add characters/objects.
To know how to design and add platforms.
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.
To know when sharing of personal information is and is not safe.
To know and recognise privacy settings and the value of implementing them.
To know what information that is safe to share and what is not safe to share online
To identify a range of ways to report concerns about content and contact.	To know how to adapt a poem and edit and replace.
To know how to Copy and Paste text and images to create a text
To know how to find and replace suitable words including synonyms.
To know how to format text for a purpose
To know how to edit images inside documents
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.
To know how to use lines and fill tools to make interesting patterns.
To know how to use select, copy and paste to duplicate elements to improve accuracy and speed.
To know how to flip and rotate elements to create interesting effects, such as symmetry.
To know how to use zoom tools to add more detail.
To know how to store and retrieve work	To know how to write a simple program with text outputs and movement
To know how to write a program with repetition
To know how to write programs using different inputs
To know how to program musical outputs
To know how to debug Programs
To know how to program conditions with data variables and operators
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.
To know how to use Comic creation to cover a wide range of genres.
To know how to add, resize and organise colour or picture backgrounds
To know how to add, resize, organise characters/objects to different panels.
To know how to add narration using text and direct speech using speech bubbles.

LEP

1. Design, add and animate backgrounds.
2. Design and add characters/objects.
3. Record and present information
4. Combine text and graphics in a printable form
5. Use sound and video onscreen presentations
6. Include hyperlinks
7. Design and add platforms.
8. Create an app store listing with icon, effective description and screenshots.
Ilearn2 –Digital Storyboard
Barefoot, icompute, hour of code	1. Choose when to share personal information
2. Evaluate an APP for cost and usage
3. What is not safe to share online and why
4. Identify online dangers
Ilearn2 – E safety
Think U Know, BBC clips, CEOP	1. Copy and Paste text and images.
2. Find and replace words.
3. Format text for a purpose.
4. Add an image and edit it inside a document.
5. Search the internet using key words
6. Minimise searches by adding factors.
Ilearn2 – Document editing + creation
Microsoft Word, PowerPoint	1. Use different thickness of lines and fill tools.
2. Use different shapes (outlines and fill) and label them with text.
3. Use select, copy and paste to duplicate elements.
4. Flip and rotate elements to create effects, such as symmetry.
5. Use zoom tools to add more detail.
6. Create scales, chords, arpeggios, melodies and rhythm to build a song.
7. Build up a mix using sampled sounds.
Ilearn2 – Music Creation
Barefoot, icompute, animoto	1. Write a simple program with text outputs, wait commands and movement.
2. Write a program with movement and repetition.
3. Write programs using different inputs, such as keyboard, mouse and touch screen
4. Record own sound effects and import
5. Select and import existing music
Ilearn2 – Programming in Scratch
Barefoot, icompute, hour of code	1. Add, resize and organise colour or picture backgrounds.
2. Add, resize, organise characters/object to different panels.
3. Add narration using text and direct speech using speech bubbles.
4. Make predictions about the effect
5. Plan ahead idea in a sequence.
6. Make use of search engines, menus and indexes.
Ilearn2 – Comic Creations
Barefoot

links

i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Internet Legend	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Online safety	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Project Evolve

Vocab

T	discuss, record, design, presentation, audience, research, review, text	**T**	share, safety, acceptable, unacceptable, evaluate	**T**	Poetry, replace, synonyms, author, perfect, replace, edit	**T**	Scales, chords, arpeggios, rhythm tempo, mixing, multitasking. Flip, rotate, symmetry	**T**	Program, edit, movement, repetition, sound effects, import, variables, predictable, unpredictable.	**T**	Predictions, comic, create, speech bubbles, organise, colour, characters, narration, direct speech
S	audio, hyperlinks, , platform, flying, puzzle, Apple, Pixar, Animate, app, icon, desktop, store, backgrounds,	**S**	privacy, password, data, report, catfishing, online dangers APP, costs, online, in APP, privacy settings	**S**	box, transitions, design, create, minimise, searches, factors background, hyperlinks, text, copy, paste, format, image	**S**	Code, graphic representation Sample, input, creation, patterns, mix	**S**	feature, select, Scratch, avatar, Input, random, actions, outputs, debug, operators	**S**	Comic creations, narration, search engine, character, object Add, resize, search, research, locate, panels,

Focus / NC

• write programs that accomplish specific goals
• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	• design a sequence of instructions, including directional instructions
• use sequence, selection, and repetition in programs; work with variables and various forms of input and output	• use technology respectfully and responsibly
• Know different ways they can get help if concerned
• 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	• navigate the web to complete simple searches
• understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration	• use a range of software for similar purposes
• collect and present information
• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	• understand what computer networks do and how they provide multiple services
• 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	• discern when it is best to use technology and where it adds little or no value
• 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

Y3/4 Skills Progression

	IT	Text and Multimedia	Digital Images	Sound	Communicate	E safety	Algorithms	Handling Info	Modelling simulations	Data Logging	Technology	Networks	The Internet
	CS / DL	Record and present information integrating a range of appropriate media combining text and graphics in a 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 use 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.
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 (th structure of which has been set up for them) to enter and save and save information on a given subject.
They follow straight forward lines of enquiry to search their data for their own purposes.
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.
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).
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.
Begin to show an understanding of URLs.

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

Animated Food Chain — Photo editing	TED talks — The Internet	Passwords and E safety Experts — Audio editing	Mindset of Mindcraft 3D design — Repetition in Shapes	Rising to Bill Gates Challenge (Scratch) — Repetition in games	Choose your Team — Data Logging

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

To know how to spend time filming a stop-motion animation. To know how to add and edit backgrounds and shapes in PowerPoint for a purpose. To know how to duplicate slides and move objects to create a stop-motion animation using frames. To know how to use pulse animations in PowerPoint and adjust speed and loop. Clone frames to create stop-motion animation.	To know and understand what a slogan is. To know how to plan for and film a short TED talk type video. To know how to appreciate how search results are selected and ranked. To know how to use search technologies. To know how to find specific pieces of information. To know how to reference the correct source of information. To know how to check the internet for fake news by cross-referencing facts	To know how to recognise acceptable and unacceptable behaviour. To know how to identify a range of ways to report concerns about content and contact. To know and understand the importance of keeping passwords safe. To know and understand how to generate effective and secure passwords. 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. To know how to use Minecraft to familiarise themselves with 3D modelling. To know how to explore Sketchup and begin to familiarise themselves with specific feature. 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. To know and understand the contribution he and Microsoft have made to the world. To know how to add conditions and sensing. To know how to debug Programs. To know how to program conditions with data variables and operators. To know how to program random variables to add unpredictability. To know how to program broadcast commands between sprites	To know how to manipulate data in their spreadsheet. To know how to 'Ask' their database questions to manipulate. To know how to select cells and resize them, fill with colour and add borders, non-adjacent cells plus resize multiple cell widths. To know how to use formulae to find totals, averages and maximum/minimum numbers. To know how to select the correct chart type to present data, answer 'what if?...' questions

LEP

1. Create a stop-motion video by duplicating slides (frames). 2. Create animation using transition effects (motion paths, pulse etc). 3. Animate individual elements of objects. 4. Create animated GIF files by animating pixels 5. control devices on screen 6. predict, test and modify 7. predict, test and refine programming — Ilearn2 – Animation, app design icompute, BBC Clips, PowerPoint	1. Use search technologies to find specific pieces of information. 2. Manipulate digital images 3. Use software to convey mod 4. Ask own questions using ICT sources 5. Use a menu, hyperlinks and text boxes as appropriate 6. Reference the correct source of information. — Ilearn2 – Internet research, APP design BBC clips, PowerPoint,	1. Understand how we communicate and share content online 2. Use the terms safely and respectfully 3. Understand the policy rights and why 4. Basic copyright laws 5. Create a secure password — Ilearn2 – E safety Think u Know, Gooseberry planet, Kapow	1. Understand 3D spacial awareness 2. Make a short film, animation 3. Sourced, capture and create, 4. Create quality presentations 5. Add 3D shapes, resize, adjust height, duplicate and use the different perspective. 6. Re-create different types of buildings using 3D shapes. 7. Create roads/paths by adjusting the height of 3D shapes. 8.Add windows and door shapes — Ilearn2 – 3D design, video editing Minecraft, Krita	1. Program inputs with loops. Use conditions and sensing for interactions. 2. Write a program with audio outputs and inputs 3. Debug a variety of programs. 4. Program conditions with data variables and operators. 5. Life and experiences of Bill Gates 6. Create multiple track compositions 7. Seek and respond feedback 8. Recognise not all internet information is accurate — Ilearn2 – Scratch, animation Barefoot, icompute, hour of code	1.Select cells and resize them, fill with colour and add borders. 2. Find and present data as a table and suitable chart. 3. Give chart a suitable title and label axis correctly. 4. Select and use non-adjacent cells and resize multiple cell widths. 5. Use advanced skills 6. Manipulate a database 7. Enter key data knowing specific reasons 8. Ask appropriate questions to gain knowledge — Ilearn2 –data handling Barefoot, icompute, 2 simple

links

i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Internet Legends	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Online safety	i learn 2	Teach comp	Project Evolve

Vocab

T	recreate, title, predict, test, refine, video, frames, food chain	T	Websites, searching, appreciate, information, source, reference Plagiarisms, copyright, law, property	T	Explore, safety, communicate, rights, secure, respectful, responsible.	T	instructions, features, 3D, 2D, shapes, structure, design, create	T	Variables, loop, program, edict, adapt, create,	T	information, manipulate, average, manipulate, width, resize, data
S	credits, scratch, GIF, control device, slides, duplicating, PowerPoint, morph animation, stop go, pulse, motion paths	S	transitions, design, create, software, hardware, programming, protect, rules, website PowerPoints, background, search, hits, highlight, hyperlinks, text box, TED talks	S	copyright, policy, online safety, passwords, generate Passwords, secure, technology, cbbc	S	representations, modelling, sketch up, CAD, modelling Minecraft, structure, capture, create, film, animation	S	foundation, Microsoft, challenge, loop, variable, Bill Gates, Windows applications, server, operating system, debug, app, outputs, inputs	S	share, accuracy, criteria, enter, cursor, select, toolbar, Spreadsheet, cell, formulae, database, data,

Focus /NC

• produce and upload a podcast • 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	• know how to search for specific information and know which information is useful and which is not • 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	• recognise acceptable and unacceptable behaviour using technology • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• give an 'on-screen' robot specific instructions that takes them from A to B • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	• experiment with variables to control models use sequence, selection, and repetition in programs; work with variables and various forms of input and output	• make an accurate prediction and explain why they believe something will happen (linked to programming) • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Y3/4 Skills Progression

	IT	Text and Multimedia	Digital Images	Sound	Communicate	E safety	Algorithms	Handling Info	Modelling simulations	Data Logging	Technology	Networks	The Internet
	CS / DL	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. ◻ 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. ◻ They follow straight forward lines of enquiry to search their data for their own purposes. ◻ 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. ◻ 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). ◻ 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. ◻ Begin to show an understanding of URLs.

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

Art Kano Creations	Networks and inputs	CBeebies ebook Challenge	Tour of America (Data analysis)	Preparing for the Planets	Cyber Bullying and Reporting
Selection in quizzes	Physical computing	Video editing	Flat file Databases	Physical Devices	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

To know how to write a simple program with text outputs and movement using Scratch (LA) Art Kano (Other) To know how to write a program with repetition and different inputs To know how to add conditions and sensing to a program To know how to work with lists to create random actions and program random variables to add unpredictability. To know how to program broadcast commands between sprites	To know and understand computer networks, including the internet To know how they can provide multiple services, such as the World Wide Web To know what opportunities, they offer for communication and collaboration. To know what is email and how can we use it safely To know how to control physical systems (Physical inputs and outputs) 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. To know how to make e books and understand how to add colour and style To know how to add, position and format text on different pages To know how to position images from web To know how to add audio, including hiding it behind an object. To know how to add hyperlinks to navigate	To know how to find and present data as a table and chart. To know how to use formulae to find totals, averages and maximum/minimum numbers To know how to use sensors to collect data over time, such as temp, light, humidity To know how to record data to the computer and display them in a graph. 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. To know how to add text and images to a slide. To know how to add icons and text to use as navigation. To know how to duplicate slides to create multiple pages of the app. To know how to create hyperlinks to create navigation. To understand that computers use physical inputs and outputs and give examples. To know how to program physical inputs, outputs (e.g program LED lights) and random variables. 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. To know how to identify online dangers, including people are not who they say they are and the dangers they pose. To know what to include when creating online activities such as blogging, podcasting and email. To know what is their digital footprint and what they can do about it

LEP

1. Program list variables that choose randomly through Kodu 2. Program inputs, conditions and sensing for interaction, data variables for scoring and a game timer. 3. Program Inputs, outputs, loops, conditions, sensing and variables. 4. Game creation to accommodate a set of given variables. Ilearn2 – *Text Based programming Kodu*	1. Understand computer networks, internet and cloud computing. 2. What is email and how can we use it safely? 3. How and why can we collaborate online. 4. Understand that computers use physical inputs and outputs and give examples. 5. Program physical inputs and outputs (e.g program LED lights) Ilearn2 – *Computer networks and the Internet* icompute, BBC Clips,	1. Program conditions and random variables 2. Explore and suggest various animations 3. Discuss animation ideas and evaluate 4. Redraft creations giving reasons. 5. Add and position images from camera/internet. 6. Add audio, including hiding it behind an object. 7. Add and format shapes. 8. Add hyperlinks to pages. Ilearn2 – *ebook creation* icompute, PowerPoint, Krita	1.Find data from internet (Google maps) 2. Find and present data as a table and suitable chart. 3. Give charts a suitable title and label axis correctly. 4. Use formulae to find totals, averages and maximum/minimum numbers. 5. using data from South America to collate data when travelling Ilearn2 – *Data Handling* Barefoot, icompute, Access	1. Understand 3D spatial awareness. 2. Add 3D shapes, resize, adjust height, duplicate and use the different perspective. 3. Re-create different types of buildings using 3D shapes. 4. Create roads/paths by adjusting the height of 3D shapes. 5. Add windows and door shapes. 6. Make a short film or animation 7. Trim and cut the film to edit appropriately 8.Add sound through shared files Ilearn2 – *Physical devices* 2animate, Krita	1. Online privacy and what it constitutes 2. Explore digital citizenship 3. Understand not all internet features are accurate. 4. Communicate and share content online safely, responsibly and respectfully. Ilearn2 – *E safety* Think u Know, BBC Clips, Kapow, CEOP

links

i learn 2	Teach comp	Online safety	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Online safety	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Internet Legends

Vocab

T	aware, digital, timer, scoring, audience, presentation	T	Communication, collaboration, physical,	T	animation, discussions, variables, create, format, audio	T	Light, temperature, humidity, location, coordinates, title, axis, chart, graph, averages, minimum, maximum	T	storyboard, cut, edit, special awareness, 3D shapes, height, width, adjust	T	Stay safe, online, privacy, features, accurate, responsible, respectfully
S	presentation, share, email click, gaming, create, conditions, debug, predictability Scratch, Kodu, input, output, variables,	S	manipulate, representation, cloud, program, Internet, WWW Network, systems, LED, inputs, outputs	S	source, capture and create, style, vimeo, web Short stop animation, ebook, hyperlink, flip book,	S	review present, refine, select, cells, Excel Charts, data, analysis, cells, formulae	S	trim, audio, review present, refine, CAD, trim Animation, shoot, shared files, save, edit, enhance	S	privacy, digital citizenship Cyber bullying, digital footprint, real life scenario

Focus / NC

• develop a program that has specific variables identified • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	• use technology to control an external device • 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	• understand how search results are selected and ranked • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	• analyse and evaluate information reaching a conclusion that helps with future developments • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	• combine sequences of instructions and procedures to turn devices on and off • use sequence, selection, and repetition in programs; work with variables and various forms of input and output	• understand that they have to make choices when using technology and that not everything is true and/or safe • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Y5/6 Skills Progression

	Text and Multimedia	Digital Images	Sound	Communicate	E safety	Algorithms	Handling Info	Modelling simulations	Data Logging	Technology	Networks	The Internet
IT												
CS	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. ☐ 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. ☐ Use appropriate methods to validate information and check for bias and accuracy. ☐ 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). ☐ 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. ☐ The need for accuracy is demonstrated and strategies for spotting implausible data are evident. ☐ 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. ☐ Understand the need for accuracy when creating formulae and check regularly for mistakes, by questioning results. ☐ 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. ☐ 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. ☐ 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
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 Spreadsheets	History and Binary Sensing	The Code Behind the Game (Web design) Webpage Creation	Communications, Emoji's, text talk and Phishing Communication	Programming with Python Variables in games	Image editing and Presenting 3D creation

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

To know how to create their own game using drag and drop programming. To know what virtual reality is and how it can be used to help people. To know how to add, move and resize objects in a virtual reality environment To know how to animate objects for realism. To know how to use code blocks to add movement (with grouping, conditions). To know how to create multiple scenes of VR environments.	To know how to design and create digital content to accomplish goals To know and understand the impact technological changes have on society. To know how to predict how technology will change in the future. To know and understand why computers/electronics use binary. 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) To know how to add and format text within a website. To know how to organise sections and pages. To know how to add and edit images. To know how to include other features such as hyperlinks, buttons and files. 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. To know and identify the features and implications of a phishing email. To know how to use the safer internet centre to explore the parameters of sharing images online. To understand the consequences of sharing photo/videos online. To know how to use the email simulator to explore vocabulary and safety through email.	To know how to program movements using Python Turtle To know how to print text using Python To know how to use Python as a calculator To know how to program loops to repeat text To know how to program interactive inputs 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: To know how to take and crop a screenshot and learn about ratios. To know how to adjust the colours, brightness, contrast and filters. To know how to add drawing and text layers. To know and understand that content drives a presentation, not the other way round

LEP

1. Understand what virtual reality is and how it can be used to help people. 2. Add, move and resize objects in a virtual reality environment 3. Animate objects for realism. 4. Use code blocks to add movement (with grouping) and interactions (conditions). 5. Create multiple scenes of VR environments 6. Repurpose and make appropriate use of games 7. Experiment with drag and drop programming. Ilearn2 – Virtual reality Barefoot, icompute, Google VR, learnbright, beloola	1. Understand why computers/electronics use binary. 2. To convert binary code to denary numbers (decimal numbers) and visa versa. 3. Design and create digital content to accomplish goals. 4. Use search technologies effectively and be discerning in evaluating digital content. 5. Understand how technology has changed over time. Combine text and images to present ideas. 6. Understand the impact (positive/negative) technological changes have on society. 7. Predict how technology will change in the future. Ilearn2 – Binary code, computers past, present and future BBC Clips, HTML programming	1. Add and format text within a website. 2. Organise sections of web-pages and multiple page with relevant titles. 3. Add and edit images. 4. Include other features such as hyperlinks, buttons and files. 5. Evaluate other websites and provide constructive feedback. 6. Make necessary changes to the website based on feedback. Ilearn2 – Web design Icompute, google design,	1.Understand the use of emoji's and their purpose 2.Explore and create text talk 3.Evaluate aspects of phishing 4. Sending appropriate emails and to a specific audience. 5. Communicate and share content online safely, responsibly and respectfully. Ilearn2 – E safety, Think u Know, CEOP, BBC Clips	1. Program movements using Python Turtle 2. Use the PRINT command for text. 3. Program a simple calculator in Python. 4. Program loops to repeat text. 5. Program interactive inputs. Input tasks to create a quiz, calculator, and questions. Ilearn2 – Programming with Python Python, Scratch, Kodu	1. Take and crop a screenshot and understand ratios. 2. Adjust the colours, brightness, contrast and filters. 3. Add drawing and text layers. 4. Import new images as layers and resize/add effects. 5. Save finished image to use in other projects. 6. Create a script to present 7. Understand target audience. Ilearn2 – Image editing Krita,

links

i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Internet Legends	i learn 2	Teach comp	Internet Legends	i learn 2	Teach comp	Project Evolve	i learn 2	Teach comp	Online safety

Vocab

T	Programming, animate, realism, add move, grouping, interaction, conditions	T	create, timeline, produce, history, accomplish, goals, combine, decimal	T	programming, design, peer review, feedback	T	abbreviations, responsible, text respect, audience	T	App shed, create, repeat, interactive, calculator	T	review, audience, design, target, perform, edit,
S	convention, peer review, handlers, resize, convention, scenes, VR environment Data drop, Virtual reality, programming, drag and drop	S	Text, dots, technology, electronics, decimal Binary, impact, achieve, digital content, restore	S	convention, peer review, handlers, buttons, internet services Data drop, web, HTML, format, software, hyperlink	S	phishing, implications, send, accept Emoji's, safe, responsible, content, text talk,	S	tune, wireframe, plan, training, loop, print, repeat Create, build, algorithms, Python, programming, outputs,	S	build, test, evaluate, refine, photo, image, text layers, rotate Presentation, effect, import, screenshot, download

Focus /NC

• be aware that some search engines may provide misleading information • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	• write a program that combines more than one attribute • use sequence, selection, and repetition in programs; work with variables and various forms of input and output	• develop a sequenced program that has repetition and variables identified • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	• Be increasingly aware of the potential dangers in using aspects of IT and know when to alert someone if feeling uncomfortable • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• design algorithms that use repetition and 2-way selection • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	• present the data collected in a way that makes it easy for others to understand • use sequence, selection, and repetition in programs; work with variables and various forms of input and output

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												
CS	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.	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. ◌ Use appropriate methods to validate information and check for bias and accuracy. ◌ Where possible seek and respond to feedback.	Independently create sequences of commands to control devices in response to sensing (i.e. use inputs as well as outputs). ◌ 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. ◌ The need for accuracy is demonstrated and strategies for spotting implausible data are evident. ◌ 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. ◌ Understand the need for accuracy when creating formulae and check regularly for mistakes, by questioning results. ◌ 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. ◌ 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. ◌ 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
DL												

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

The National Curriculum for computing aims to ensure that all pupils:

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

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

o Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems

o 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

https://teachcomputing.org

https://projectevolve.co.uk/

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

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