Computing Skills Progression

YEAR GROUPS

Early Years	1	2	3	4	5	6
Computer Science: write and debug programs To create a simple program on a computer. Apps: Scratch Jr, Beebot app Sequence stories (Hungry Caterpillar)	**Computer Science: write and debug programs** Can create simple programs NCCE Unit – Moving a robot Learners will explore using individual commands, both with other learners and as part of a computer program. https://teachcomputing.org/curriculum/key-stage-1/programming-a-moving-a-robot NCCE Unit – animation. Introduces learners to on-screen programming through ScratchJr. Use programming blocks to use, modify, and create programs. https://teachcomputing.org/curriculum/key-stage-1/programming-b-introduction-to-animation	**Computer Science: write and debug programs** Can debug simple programs NCCE Unit – Introduction to quizzes. Recaps on learning from the Year 1 intro to animation. Use and modify designs to create their own quiz questions in ScratchJr and realise these designs in ScratchJr using blocks of code. https://teachcomputing.org/curriculum/key-stage-1/programming-b-an-introduction-to-quizzes	**Computer Science: write and debug programs** Design and create programs that use sequence NCCE Unit – sequencing music. Explores sequencing in programming through Scratch. Introduction to the programming environment, be new to most learners. Introduced to motion, sound, and event blocks which they will use to create their own programs, featuring sequences. Final project is to make a representation of a piano. https://teachcomputing.org/curriculum/key-stage-2/programming-a-sequence-in-music	**Computer Science: write and debug programs** Use repetition in programs NCCE Unit – repetition in shapes. Repetition and loops within programming. Pupils will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language. https://teachcomputing.org/curriculum/key-stage-2/programming-a-repetition-in-shapes/lesson-1-programming-a-screen-turtle	**Computer Science: write and debug programs** Design and debug programs that use selection NCCE Unit – selection in physical computing. Use physical computing to explore the concept of selection in programming through the use of the Crumble. Introduced to a microcontroller (Crumble controller) and learn how to connect and program components (including output devices- LEDs and motors) through the application of their existing programming knowledge. Crumble switch/motor unit – link to D&T model Moon around Earth https://teachcomputing.org/curriculum/key-stage-2/programming-a-selection-in-physical-computing	**Computer Science: write and debug programs** Work with variables NCCE Games unit. Explores the concept of variables in programming through games in Scratch. First, pupils will learn what variables are, and relate them to real-world examples of values that can be set and changed. Use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, pupils will experiment with variables in an existing project, then modify them, then create their own project. In Lesson 4, pupils will focus on design. In Lesson 6, their knowledge of variables and design to improve their game in Scratch. https://teachcomputing.org/curriculum/key-stage-2/programming-a-variables-in-games
Computer Science: algorithms and logical reasoning To explore programmable toys- Beebots, Code a Pillar. Match symbol cards to direct vocabulary, direct each other using words then symbols, replicate using programmable toy. Identify when things have gone wrong, what went wrong and can they fix it?	**Computer Science: algorithms and logical reasoning** Understands that programs execute by following precise instructions What is an algorithm? Unplugged activities, list steps in a task in order, such as brushing teeth, choreograph a dance, gymnastics routine, etc.	**Computer Science: algorithms and logical reasoning** Can use logical reasoning to predict the behaviour of simple programs Understands what algorithms are and that they are implemented as programs on devices NCCE Unit – Robot algorithms. Use given commands in different orders to investigate how the order affects the outcome. Learn about design in programming. https://teachcomputing.org/curriculum/key-stage-1/programming-a-robot-algorithms	**Computer Science: algorithms and logical reasoning** Use logical reasoning to detect errors in programs NCCE Unit – events and actions. Moving a sprite in four directions (up, down, left and right). Explore movement within the context of a maze, using design to choose an appropriately sized sprite. https://teachcomputing.org/curriculum/key-stage-2/programming-b-events-and-actions	**Computer Science: algorithms and logical reasoning** Use logical reasoning to correct errors in programs NCCE Unit – repetition in games. Repetition in programming using Scratch. Scratch activity similar to Logo in Programming A, discover similarities. Look at the difference between count-controlled and infinite loops, use their knowledge to modify existing animations and games using repetition. Their final project - design and create a game which uses repetition. https://teachcomputing.org/curriculum/key-stage-2/programming-b-repetition-in-games	**Computer Science: algorithms and logical reasoning** Use logical reasoning to explain how algorithms work and detect and correct errors in them NCCE Unit – Selection in quizzes. Develop their knowledge of selection by revisiting how conditions can be used in programs and then learning how the If… Then… Else structure can be used to select different outcomes depending on whether a condition is true or false. They represent this understanding in algorithms and then by constructing programs using the Scratch. https://teachcomputing.org/curriculum/key-stage-2/programming-b-selection-in-quizzes	**Computer Science: algorithms and logical reasoning** Can solve problems in writing programs by decomposing them into smaller parts NCCE Unit – Sensing. Explore the Micro:bit to eventually make a motivational step-counter. All the four programming constructs: sequence from year 3, repetition from year 4, selection from year 5 and variables, introduced in year 6, programming A. Could use Crumbles and adapt this unit to make a buggy that detects distance to prevent it crashing into a wall. https://teachcomputing.org/curriculum/key-stage-2/programming-b-sensing https://www.barefootcomputing.org/resources/viking-raid-animation

		Roamer, Beebot, Probot				
Vocabulary Instructions, robot, sequence, turn, left, right	**Vocabulary** Control, program, code, predict, mistake, turn, instructions	**Vocabulary** Algorithm, program, software, code, predict, distance,	**Vocabulary** Algorithm, error, bug, sequence, repeat, motion, repeat, loop, computational thinking, command, block, sprite, script	**Vocabulary** Debug, selection, decompose, conditional, logical, command	**Vocabulary** Simulation, nested, rotate, forever, loop, LED, wait, abstraction	**Vocabulary** Variables, random, generate, animate, evaluate
Information Technology: **create digital content** Use ICT hardware to interact with age appropriate software. Create drawings on ipad or IWB. Change colour, thickness of pen, etc. Print these and use them for making cards, calendars, wrapping, etc or have an exhibition. Discuss the differences between digital and 'real' painting. Make an animation story or take pictures of each other in masks or of toys etc. Apps: Puppet Pals, Toontastic, Sock Puppet, I Can Animate	**Information Technology:** **create digital content** Use technology purposefully to create digital content Collect / present data - Purple Mash or Excel to create pictograms NCCE Unit - Digital painting / keyboard skills https://teachcomputing.org/curriculum/key-stage-1/creating-media-digital-painting Apps: camera, Seesaw	**Information Technology:** **create digital content** Use technology to manipulate digital content Typing skills - BBC Dance Mat https://www.bbc.co.uk/bitesize/topics/zf2f9j6/articles/z3c6tfr Keyboard skills - https://www.abcya.com/grades/2/skill NCCE Unit – Making music Make patterns and use those patterns to make music with both percussion instruments and digital tools. https://teachcomputing.org/curriculum/key-stage-1/creating-media-making-music NCCE Unit – Digital photography Recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos https://teachcomputing.org/curriculum/key-stage-1/creating-media-digital-photography Apps: Pic Collage, Book Creator, Puppet Pals, Chatterpix	**Information Technology:** **create digital content** Can choose from a variety of software and internet services to accomplish given goals NCCE Unit – Desktop publishing Become familiar with the terms 'text' and 'images'. Use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. https://teachcomputing.org/curriculum/key-stage-2/creating-media-desktop-publishing (This unit suggests using Adobe Spark but Word/PowerPoint/Publisher etc will be find to develop skills such as finding templates, changing font and adding content. May be worth looking at Adobe Spark though as it is online so could use iPads which are sometimes more reliable than Netbooks or laptops) NCCE Unit – Stop frame animation Use a range of techniques to create a stop-frame animation using tablets. Apply those skills to create a story-based animation. https://teachcomputing.org/curriculum/key-stage-2/creating-media-animation Apps: Book Creator, DoInk	**Information Technology:** **create digital content** Create content to accomplish a goal NCCE Unit – audio editing to create a podcast. Examine devices capable of recording digital audio, include identifying the input device (microphone) and output devices (speaker or headphones). https://teachcomputing.org/curriculum/key-stage-2/creating-media-audio-editing https://www.audacityteam.org/download/ NCCE Unit – photo editing Develop understanding of how digital images can be changed and edited, how they can then be resaved and reused. Consider the impact that editing images can have, and evaluate the effectiveness of their choices. https://teachcomputing.org/curriculum/key-stage-2/creating-media-photo-editing https://www.bbc.co.uk/bitesize/topics/zf2f9j6/articles/z2tgr82	**Information Technology:** **create digital content** Design and create systems to accomplish a given goal NCCE Unit – vector drawing Learn that vector images are made up of shapes. Learn how to use the different drawing tools and how images are created in layers. Explore ways which images can be grouped and duplicated to support them in creating more complex pieces of work. https://teachcomputing.org/curriculum/key-stage-2/creating-media-vector-drawing NCCE Unit – video editing Learn how to create short videos in groups. As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video https://teachcomputing.org/curriculum/key-stage-2/creating-media-video-editing Animated gif using Purple Mash or other animation software	**Information Technology:** **create digital content** Combine a variety of software to accomplish given goals on a range of digital devices NCCE Unit – 3d modelling. Develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, including combining 3D objects to make a house and examining the differences between working digitally with 2D and 3D graphics. Learners will progress to making accurate 3D models of physical objects, such as a pencil holder, which include using 3D objects as placeholders. https://teachcomputing.org/curriculum/key-stage-2/creating-media-3d-modelling NCCE Unit – create a web page Introduces the creation of websites for a chosen purpose. Identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths. https://teachcomputing.org/curriculum/key-stage-2/creating-media-web-page-creation
Write an email/letter to Santa	**Information Technology: information and data** Use technology purposefully to organize and store digital content NCCE Unit – Digital writing + keyboard skills. Using a computer to create and change text https://teachcomputing.org/curriculum/key-stage-1/creating-media-digital-writing NCCE Unit – Grouping data Begin by using labels to put objects into groups, and labelling these groups.	**Information Technology: information and data** Use technology to retrieve digital content Basic skills – logging on, opening files, saving in correct folder Create a Branching database using hyperlinks in a Powerpoint Kahoot for data collection Unplugged - Modify/improve a pictogram NCCE Unit – Pictograms. Introduces the term 'data'. Will begin to understand what data means and how this can be collected in the form of a tally chart.	**Information Technology: information and data** Can collect and present information and data NCCE Unit – branching databases. Develops understanding of what a branching database is and how to create one. Understand what attributes are and how to use them to sort groups of objects by using yes/no questions. Create physical and on-screen branching databases. https://teachcomputing.org/curriculum/key-stage-2/data-and-information-branching-databases	**Information Technology: information and data** Can combine information and data NCCE Unit – data logging. Consider how and why data is collected. Consider the senses that humans use and how computers can use special input devices called sensors to monitor the environment. https://teachcomputing.org/curriculum/key-stage-2/data-and-information-data-logging	**Information Technology: information and data** Can evaluate information and data NCCE Unit – flat file databases Looks at how a flat-file database can be used to organise data in records. Pupils use tools within a database to order and answer questions about data. They create graphs and charts from their data to help solve problems. (Titanic spreadsheet in J2E) https://teachcomputing.org/curriculum/key-stage-2/data-and-information-flat-file-databases	**Information Technology: information and data** Can analyse information and data Money Management Unit NCCE Unit – introduction to spreadsheets Introduces the learners to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Learners will be taught how to apply formulas that include a

	https://teachcomputing.org/curriculum/key-stage-1/data-and-information-grouping-data Apps: Seesaw	https://teachcomputing.org/curriculum/key-stage-1/data-and-information-pictograms			Link to maths / science - Create own spreadsheets from data gathered and draw conclusions.	range of cells, and apply formulas to multiple cells by duplicating them. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create graphs and charts, and evaluate their results in comparison to questions asked. https://teachcomputing.org/curriculum/key-stage-2/data-and-information-spreadsheets
Vocabulary **iPad, computer, app, camera, computer, technology, keyboard, button, printer**	**Vocabulary** **Landscape, portrait, save, design, illustration, digital**	**Vocabulary**	**Vocabulary** Green screen, spreadsheet, graph, data, QR code, copy, cut, paste, insert, save, resize			
Digital Literacy Explain what a computer and peripherals are Explore parts of old technology, junk modelling a computer Play keyboard and mouse control games	**Digital Literacy: networks** Describe common uses of information technology beyond school Describe the main parts of a computer http://ncce.io/csn1-2-p Develop mouse skills http://ncce.io/csn1-3-p NCCE Unit – Technology around us https://teachcomputing.org/curriculum/key-stage-1/computing-systems-and-networks-technology-around-us	**Digital Literacy: networks** Describe common uses of information technology beyond school NCCE Unit – Technology around us. How is IT beneficial to our lives? https://teachcomputing.org/curriculum/key-stage-1/computing-systems-and-networks-it-around-us	**Digital Literacy: networks** Understand the opportunities computer networks offer for communication Ways to communicate online NCCE Unit – Connecting Computers develop understanding of digital devices, initial focus on inputs, processes, and outputs. Comparing digital and non-digital devices, introduce to computer networks that include infrastructure devices like routers and switches. https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-connecting-computers https://www.bbc.co.uk/bitesize/topics/zs7s4wx/articles/zxisfg8 Email – Google/Purple Mash	**Digital Literacy: networks** Understand how computer networks can provide multiple services, such as the world wide web History of internet NCCE Unit – The Internet learn the World Wide Web is part of the internet, be given opportunities to explore the WWW to learn about who owns content and what they can access, add, and create. Will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information. https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-the-internet https://www.bbc.co.uk/bitesize/topics/zs7s4wx/articles/z2nbgk7 https://www.bbc.co.uk/bitesize/topics/zs7s4wx/articles/z3tbgk7 https://www.bbc.co.uk/bitesize/topics/zs7s4wx/articles/ztbjq6f https://www.bbc.co.uk/bitesize/topics/zv63d2p/articles/zt9thyc	**Digital Literacy: networks** Understand the opportunities computer networks offer for collaboration NCCE Unit – Sharing information Develop understanding of computer systems and how information is transferred between systems and devices. https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-sharing-information Collaborate with another school on piece of writing / science project	**Digital Literacy: networks** Understands the basic workings of computer networks including internet What is world wide web? https://www.bbc.co.uk/bitesize/clips/zxxf34j NCCE Unit – Communication Class will learn about the World Wide Web as a communication tool. learn how we find information on the World Wide Web, through learning how search engines work (including how they select and rank results) and what influences searching, and through comparing different search engines. They will then investigate different methods of communication, before focusing on internet-based communication. Finally, they will evaluate which methods of internet communication to use for particular purposes. https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-communication https://www.barefootcomputing.org/resources/ranking-search-activity https://www.barefootcomputing.org/resources/stop-think-do-i-consent Binary – Bracelets, calculations https://code.org/curriculum/course2/14/Teacher
			Digital Literacy: searching Is selective when using digital content How to save an image How to import an image Using QR codes E book (cross curricular)	**Digital Literacy: searching** Can appreciate how search results are selected Spiders:	**Digital Literacy: searching** Is discerning in evaluating digital content Fake News https://www.allaboutexplorers.com/explorers/drake/	**Digital Literacy: searching** Appreciates how search results are ranked

				https://www.wordtracker.com/academy/google/how-it-works/how-google-algorithm-works How to search effectively		
Vocabulary **Internet, share, information**	**Vocabulary** **Google, website, search, online, login, password**	**Vocabulary** **Personal information, link, icon, username,**	**Vocabulary** Search, import, internet, network, browser, avatar, footprint	**Vocabulary**	**Vocabulary**	**Vocabulary**
Digital Literacy: E Safety To know how to safely use an iPad- rules established. To know to tell an adult if you feel unsure or uncomfortable about what you are seeing.	**Digital Literacy: E Safety** Use technology safely and respectfully Rules to use technology responsibly - ncce.io/csn1-6-p Project Evolve - https://projectevolve.co.uk/toolkit/years/year-one/	**Digital Literacy: E Safety** Keep personal information private when using technology Knows who to contact for help if they are unsure about online content or contact Project Evolve - https://projectevolve.co.uk/toolkit/years/year-two/	**Digital Literacy: E Safety** Recognise acceptable online content Project Evolve - https://projectevolve.co.uk/toolkit/years/year-three/	**Digital Literacy: E Safety** Recognise acceptable online behaviour Project Evolve – https://projectevolve.co.uk/toolkit/years/4/	**Digital Literacy: E Safety** Understand the importance of using technology respectfully and responsibly Project Evolve - https://projectevolve.co.uk/toolkit/years/5/	**Digital Literacy: E Safety** Identify a range of ways to report concerns about content and contact Project Evolve - https://projectevolve.co.uk/toolkit/years/6/