HALCYON COMPUTING SKILLS PROGRESSION

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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. NCCE Unit – animation. Introduces learners to on-screen programming through ScratchJr. Use programming blocks to use, modify, and create programs.	**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.	**Computer Science: write and debug programs** *Design and create programs that use sequence* Phil Bagge - Jam Sandwich (part of English: recipe writing) 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.	**Computer Science: write and debug programs** *Use repetition in programs* Repetition and loops within programming. Pupils will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Python, a ubiquitous, text-based programming language.	**Computer Science: write and debug programs** *Design and create 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	**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.
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.	**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.	**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.	**Computer Science: algorithms and logical reasoning** *Use logical reasoning to explain how algorithms work and detect and correct errors in them* Calculate the Area / perimeter of rectangles in Scratch 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.	**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.
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, forever loop, count-controlled loop	**Vocabulary** Simulation, nested, rotate, forever, loop, LED, wait, abstraction, conditional selection, do_until, if__then, condition	**Vocabulary** Variables, random, generate, animate, evaluate
Information Technology: create digital content *Use technology to purposefully create digital content* NCCE Unit - Digital painting / keyboard skills	**Information Technology: create digital content** *Use technology to manipulate digital content* NCCE Unit – Making music Make patterns and use those patterns to make music with both percussion	**Information Technology: create digital content** *Can choose from a variety of internet software and internet services to accomplish given goals* NCCE Unit – Desktop publishing Become familiar with the terms ‘text’ and ‘images’. Use	**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	**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	**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

NCCE Unit – Digital writing + keyboard skills. Using a computer to create and change text	instruments and digital tools. NCCE Unit – Digital photography Recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos Apps: Pic Collage, Book Creator, Puppet Pals, Chatterpix	desktop publishing software and consider careful choices of font size, colour and type to edit and improve pre-made documents. 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.	input device (microphone) and output devices (speaker or headphones). Use the radio to record and listen back to content - discuss the input and output devices. 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.	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. 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	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. 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.
Information Technology: Information and data *Use technology purposefully to organize and store digital content* 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.	**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) Link to maths / science - Create own spreadsheets from data gathered and draw conclusions.	**Information Technology: Information and data** *Can analyse information and data* 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.	**Information Technology: Information and data** *Can use data to teach a machine* Data and Machine learning. Halcyon unit (via MachineLearning for Kids). Introduces the learners to using datasets to teach machines to classify categories. Learners will teach a model how to differentiate between images (cars and cups) and text (formal and informal). Finally, the connection between their smaller datasets and those that fuel LLMs will be explored.
Vocabulary Landscape, portrait, save design, illustration, digital	**Vocabulary** Data, collection, tally, chart	**Vocabulary** Green screen, spreadsheet, graph, data. QR Code, copy, paste, cut, insert, save, resize	**Vocabulary** Flat-file database, record, file, log	**Vocabulary** Columns, rows, data set, formatting data, formula	**Vocabulary** Data, dataset, label, pattern, model, training data
Digital Literacy: Networks *Describe common uses of information technology beyond school* NCCE Unit – Technology around us Develop your learners' understanding of technology and how it can help them. They will become more familiar with the different components of a computer by developing their keyboard and mouse skills, and also start to consider how to use technology responsibly.	**Digital Literacy: Computing systems and networks** *Describe common uses of information technology beyond school* NCCE Unit – Technology around us. How is IT beneficial to our lives? How is information technology (IT) being used for good in our lives? With an initial focus on IT in the home, learners explore how IT benefits society in places such as shops, libraries, and hospitals. Whilst discussing the responsible use of technology, and how to make smart choices when using it.	**Digital Literacy: Computing systems and networks** *Understand the opportunities computer networks offer for communication* Ways to communicate online Chromebooks, Networks and typing Develop an understanding of how Chromebooks rely on connections to other computers rather than their internal, physical memory. typing.com	**Digital Literacy: Networks** *Understand how computer networks can provide multiple services, such as the world wide web* 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.	**Digital Literacy: Networks** *Understand the opportunities computer networks offer for collaboration* NCCE Unit – Systems and searching Develop understanding of computer systems and how information is transferred between systems and devices.	**Digital Literacy: Networks** *Understands the basic workings of computer networks including internet* NCCE Unit – Communication and collaboration 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.
			Digital Literacy: Searching *Can appreciate how search results are selected* Spiders: https://www.wordtracker.com/academy/google/how-it-works/how-google-algorithm-works How to search effectively	**Digital Literacy: Searching** *Is discerning in evaluating digital content* https://www.barefootcomputing.org/resources/data-dash Fake News https://www.allaboutexplorers.com/explorers/drake/	**Digital Literacy: Searching** Appreciates how search results are ranked Barefoot – Selecting search activity Ranking Search activity
Vocabulary technology, computer, keyboard, mouse, screen, click, type, safe	**Vocabulary** information technology, device, network, online, choice, benefit, responsible, personal information	**Vocabulary** network, internet, Chromebook, connect, server, message, communicate, login, password	**Vocabulary** Internet, World Wide Web, website, browser, search engine, keyword, results, reliable, source	**Vocabulary** system, data, transfer, index, algorithm, filter, ranking, credibility, fake news	**Vocabulary** search engine, ranking, query, relevance, criteria, communication, collaboration, platform, evaluate
Digital Literacy: E Safety Project Evolve - https://projectevolve.co.uk/toolkit/years/year-one/	**Digital Literacy: E Safety** Project Evolve - https://projectevolve.co.uk/toolkit/years/year-two/	**Digital Literacy: E Safety** Project Evolve - https://projectevolve.co.uk/toolkit/years/year-three/	**Digital Literacy: E Safety** Project Evolve - https://projectevolve.co.uk/toolkit/years/year-four/	**Digital Literacy: E Safety** Project Evolve - https://projectevolve.co.uk/toolkit/years/year-five/	**Digital Literacy: E Safety** Project Evolve - https://projectevolve.co.uk/toolkit/years/year-six/
Vocabulary Login, username, password, permission, message, picture, kind, unkind	**Vocabulary** personal information, stranger, contact, block, report, worry, profile	**Vocabulary** digital footprint, account, privacy, settings, cyberbullying, respectful, comment, upload	**Vocabulary** trusted sources, fake, scam, secure, virus, link, download	**Vocabulary** data, algorithm, targeted (advertising/content), influence, verify anonymous, moderation, report system	**Vocabulary** terms of service, consent, encryption copyright, misinformation, manipulation, AI (artificial intelligence) digital reputation