



COMPUTING LONG TERM PLN – Following NCCE Teach Computing for Y1-Y6

The Early Years

	2s-3s Nursery	Preschool Nursery	Reception
ICT including Creating Media	- Shows interest in toys with buttons, flaps and simple mechanisms, accessing them with support. - o Toy Till - o Torch - o Musical book with buttons - Responds to cause and effect of operating the technology with support such as lights and noise.	- Seeks to acquire basic skills in turning on and operating some IT equipment including Codipillar, CD Players, torches, walkie talkies and Class Ipads. - Use Ipads to explore taking pictures of themselves and others. - Access the interactive smart board using fingers to create patterns, drawings and effects with the support of an adult.	- Have opportunities to use technology during continuous provision time including; torches, phones, remote control cars, CD players, step trackers and can talk about how they work. - Use programmes on the IWB and desktops for a purpose such as paint and maths games on www.topmarks.co.uk/, www.phonicsplay.co.uk/, www.bbc.co.uk/cbeebies/games.co.uk - Begin using a mouse/touch pad and the rules of using the computers, IWB, Ipad etc
Programming	- Handle books with interactive sources such as lights and noises. - Show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. - Operates mechanical toys including friction cars – pulling back to release tension of the car. Begin to follow simple everyday instructions linked to their routine.	Codipillar will be modelled during group time and heavily supported during provision in Spring Term to create simple algorithms. In summer term children begin to access Codipillars independently. - Children understand how to use remote control cars effectively and explore them through play. - Barefoot Computational thinking activities https://www.barefootcomputing.org/earlyyears including Super Space.	- Use unplugged coding activities – following instructions of position and direction. - Barefoot Computational thinking activities https://www.barefootcomputing.org/earlyyears Use coding critters; create a code of magical symbols arranged in the right order to cast a spell or complete the challenges. And use Bee Bots and maps to begin to create algorithms, debug and solve problems.

Years 1 - 6

	AUTUMN	SPRING	SUMMER
YEAR 1	Technology Around Us (Computer Systems & Network) Children will develop their 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 begin considering how to use technology responsibly. Digital Painting (Creating Media) Children will explore the world of digital art. They will use a range of tools to create their own paintings, while getting inspiration from other artists. They will consider their preferences when painting with, and without, the use of ICT. Key Vocabulary: technology, computer, mouse, keyboard, paint, fill, erase	Moving a Robot (Programming A) Children will explore using individual commands, as unplugged lessons and as part of a computer program. They will identify what each floor robot command does and use that knowledge to start predicting the outcome of programs. *Utilise Bee Bots and Osmo Hardware/Software Grouping Data (Data and Information) Children will begin to use data and information. They will demonstrate their ability to sort objects into different groups, based on the properties they choose and label these groups. Key Vocabulary Bee Bot, turn, clear, go, instructions. Object, label, group, search.	Digital Writing (Creating Media) Children will familiarise themselves with typing on a keyboard and begin using tools to change the look of their writing, considering differences between using a computer and writing on paper. Programming Animations (Programming B) Children will explore on-screen programming through ScratchJr. They will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. *Utilise Osmo Hardware/Software Key Vocabulary Word process, type, space, backspace, font. ScratchJr, sprite, programming, block.
Y1 E Safety	Project Evolve – Copyright - Name my work so that others know it belongs to me. - Begin to understand that work created by others does not belong to me even if I save a copy.	Project Evolve – Managing Online Information Navigate a simple webpage to get information they need e.g home, back, forward, links and tabs	Project Evolve – Privacy & Security Explain how passwords are used to protect information, accounts and devices.
	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.		

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YEAR 2	IT around us (Computer Systems and Networks) Understand how information technology (IT) is used positively in our lives. Explore IT at home and the benefits for society in places such as shops, libraries & hospitals. Whilst discussing the responsible use of technology, and how to make smart choices when using IT. Digital Photography (Creating Media) Children will recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos. They will also use this knowledge to recognise that images they see may not be real. *Utilise Digital Cameras Hardware/Software Key Vocabulary Information Technology, device, camera, digital, edit.	Robot Algorithms (Programming A) Children will develop their understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Children will use given commands in different orders to investigate how the order affects the outcome. They will also learn about design in programming; designing algorithms, testing and debug them. Pictogram (Data and Information) This unit introduces children to the term 'data'. They will begin to understand what data means and how this can be collected in the form of a tally chart. They will learn the term 'attribute' and use this to help them organise data. They will then progress onto presenting data in the form of pictograms and block diagrams. Key Vocabulary Sequence, algorithm, prediction, debug. Organise, data chart, diagram, block diagram, attribute.	Making Music (Creating Media) Children will explore how music can make them think and feel. They will make patterns and use those patterns to make music with both percussion instruments and digital tools. They will create different rhythms and tunes, using the movement of animals for inspiration. Finally, they will share their creations, compare and evaluate. *Utilise Makey Makey; banana keyboard and incredabox software. Programming Quizzes (Programming B) Children begin to understand that sequences of commands have an outcome and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr and realise these designs in ScratchJr using blocks of code. Key Vocabulary Open, edit. Sequence, command, program, run, start, outcome, predict.
Y2 E Safety	<u>Project Evolve – Managing Online Information</u> • Can give simple examples of how to find information using digital technologies, e.g. search engines, voice activated searching. • Can talk about how to use the internet as a way of finding information online. • To use simple keywords in search engines 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.	<u>Project Evolve – Privacy & Security</u> • To explain how passwords can be used to protect information, accounts and devices. • To explain how some people may have devices in their homes connected to the internet e.g. lights, cameras, televisions, toys.	<u>Project Evolve – Copyright</u> • To save their work under a suitable title or name so that other know who it belongs to • To begin to understand that work created by others does not belong to me even if I save a copy.

YEAR 3	Connecting Computers (Computer Systems and Network) Children will develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. They will compare digital and non-digital devices, before moving on to computer networks that include network infrastructure devices like routers and switches. Desktop Publishing (Creating Media) Children will become familiar with the terms 'text' and 'images' and understand that they can be used to communicate messages. They will use desktop publishing software and consider careful choices of font size, colour and type to edit. They will create their own template for a magazine front cover and make links with its use in the real world. Key Vocabulary Connection, network, wireless, cables, server. Animation, frame,	Sequencing Sounds (Programming A) Children will explore concept of sequencing in programming through Scratch. They will be introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. The final project is to make a representation of a piano. Branching Databases (Data and Information) Children will develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. They will then create physical & on-screen branching database and create an identification tool. Children will make links to databases in the real-world. Key Vocabulary Programming, commands, code, algorithm, debug. Attributes, value, table, branching database.	Stop Start Animation (Creating Media) Children will use a range of techniques to create a stop-frame animation. They will apply those skills to create a story-based animation. They will also combine other types of media with their final animations e.g. music and text. *Utilise Zu3D animation kit Hardware/Software making figures out of plasticine. Events, Actions and Programs (Programming B) This unit explores the links between events and actions, whilst consolidating prior learning relating to sequencing. Children will begin by moving a sprite in four directions within the context of a maze. This unit also introduces programming extensions, through the use of pen blocks. The unit concludes with children designing and coding their own maze tracing program. *Utilise Osmo Awbie and Sphero Hardware/Software. Key Vocabulary Font, style, template publishing, copy, paste. Motion, algorithm, logic, debugging, errors.
	Project Evolve – Copyright • explain why copying someone else's work from the internet without permission isn't fair and can explain what problems this might cause.	Project Evolve – Privacy & Security • to describe simple strategies for creating and keeping passwords private. • Give some reasons why someone should only share information with people they choose and can trust.	Project Evolve – Managing Online Information • Can explain why using various tools can refine searches more effectively.
Y3 E Safety	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		

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YEAR 4	The Internet (Computer Systems and Networks) Children will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the WWW is part of the internet, look at who owns content and what they can access, add, and create. They will also evaluate content to decide how honest/accurate/reliable it is. *Utilise physical network kit containing routers and ethernet cables. Audio Production (Creating Media) Children will identify the input device (microphone) and output devices (speaker/headphones) required to work with sound digitally. Children will discuss the ownership of digital audio and copyright implications. Children will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files using the headsets with built in microphone. Key Vocabulary Internet, network, router, security, website, world wide web. Audio, microphone, podcast, record, playback, MP3.	Repetition in Shapes (Programming A) This unit looks at 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. Data Logging (Data and Information) Pupils will consider how and why data is collected over time including the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Pupils will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Towards the end of the unit, pupils will pose questions and then use data loggers to automatically collect the data needed to answer those questions. *Utilise the Pocket Labs to record and analyse data. Key Vocabulary Logo, program, commands, algorithm, debug. Data, table, input, sensor, logger, datapoint, dataset.	Photo Editing (Creating Media) Children will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices. Repetition in Games (Programming B) Children will explore the concept of repetition in programming using Scratch. Children look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout. Key Vocabulary Edit, crop, zoom, adjustments, vignette, composite. Sprite, loop, repeat, conunt-controlled loop, repetition, animate.
Y4 E Safety	<u>Project Evolve – Privacy & Security</u> • to describe how connected devices can collect and share anyone's information with others. • To describe strategies for keeping personal information private, depending on context. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	<u>Project Evolve – Managing Online Information</u> • Can explain why using various tools can refine searches more effectively. • Can refine search phrase with additional functions	<u>Project Evolve – Copyright</u> • When searching on the internet for content to use, children can explain why they need to consider who owns it and whether they have the right to use it. • Can give some simple examples of content which I must not use without permission form the owner e.g. videos, music, images.

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YEAR 5	Sharing Information (Computer Systems and Networks) <i>Children will develop their understanding of computer systems and how information is transferred between systems and devices. Children will consider small and large-scale systems. They will explain the input, output, and process aspects of a variety of different real-world systems. Children will also take part in a collaborative online project with other class members and develop their skills in working together online.</i> Video Production (Creating Media) <i>Children will learn how to create short videos and develop the skills of capturing, editing, and manipulating video. At the conclusion of the unit, children have the opportunity to reflect on and assess their progress in creating a video. *Utilise green screen to enhance this unit.</i> <i>*Utilise the Pocket Labs to record motion, acceleration, angular velocity, in Forces Science unit & velocity in science Space unit.</i> Key Vocabulary Search engine, refine, search engine optimisation (SEO), ranking, selection, input, output. Panning, mid-range, storyboard, import, export.	Selection in Physical Computing (Programming A) <i>Children will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Children will be introduced to a microcontroller (Crumble controller) and learn how to connect and program components through the application of their existing programming knowledge.</i> Flat File Databases (Data and Information) <i>This unit 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. They use a real-life database to answer a question, and present their work to others.</i> Key Vocabulary Crumble, Microcontroller, USB, infinite loop, repetition, count controlled loop. Database, field, value, sort, filter, criteria.	Vector Drawing (Creating Media) <i>Children will learn how to use different drawing tools to create vector drawings. Children recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object they will layer their objects and begin grouping and duplicating them to create more complex pieces of work.</i> Selection in Quizzes (Programming B) <i>Children will develop their knowledge of selection and how conditions can be used in program 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, constructing programs using Scratch. They use their knowledge of writing programs to design a quiz linked to their class theme. *Utilise Lego Mindstorms to enhance this unit and children to completing coding challenges as an extension.</i> Key Vocabulary Vector, tool bar, vector drawing, modify, duplicate, layer, group. Count controlled loops, conditional, statements, algorithm, implement.
Y5 E Safety	Project Evolve – Privacy & Security ● To know what a strong password is and demonstrate how to create one ● To explain how many free apps/services might read and share private information e.g. friends, contacts, images location. ● To know what to do if a password is shared, lost or stolen Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Project Evolve – Managing Online Information ● Refine search phrases with additional functions ● Can explain how search engine rankings are returned and can explain how they can be influenced e.g sponsored results. ● Can analyse and evaluate the reliability and validity of online information based on content as well as appearance.	Project Evolve – Copyright ● Can assess and justify when it is acceptable to use the work of others. ● Can give examples of content that is permitted to be refused and know how this content can be found online.

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YEAR 6	Communication and Collaboration (Computer Systems and Networks) Children will explore how data is transferred over the internet. They will focus on addressing and the makeup and structure of data packets. Children will explore how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication including responsibly by considering what should and should not be shared on the internet. Webpage Creation (Creating Media) Children will identify what makes a good web page and use this information to design and evaluate their own website, paying specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths. Key Vocabulary Communication, internet protocol (IP), Domain Name Server (DNS), collaboration. Hypertext Markup Language (HTML), copyright, fair use, hyperlink.	Variables in Games (Programming A) Children will find out what variables are and relate them to real-world examples of values that can be set and changed. They will then use variables to create a simulation of a scoreboard. Following this children will experiment with variables in an existing project, then modify them, before they create their own project apply their knowledge of variables and design to improve their own games in Scratch. <i>*Utilise Makey Makey kit to enhance this unit, children can create their own joystick for their game.</i> Introduction to Spreadsheets (Data and Information) Children organise data into columns and rows to create their own data set. They will be taught the importance of formatting data to support calculations, and also introduced to formulas and will begin to understand how they can be used to produce calculated data. Children will use spreadsheets to plan an event and answer questions. Key Vocabulary Variables, event, algorithm, program, debug. Data, table, spreadsheet, cell, cell reference, formula.	3D Modelling (Creating Media) Children will develop their knowledge and understanding of using a computer to produce 3D models. They will familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects before creating hollow objects using placeholders and combining multiple objects to create a model of a building. Sensing Movements (Programming B) This unit brings together all four prior programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables introduced earlier in Year 6. It offers pupils the opportunity to use all of these constructs in a different, but still familiar environment, while also utilising a physical device — the micro:bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects with each lesson adding more depth. Key Vocabulary TinkerCAD, perspective, select, handles, hollow. Micro:bit, MakeCode, sequence, repetition, selection, condition, variables, sensing.
Y6 E Safety	<u>Project Evolve – Privacy & Security</u> • describe effective ways people can manage passwords e.g. storing the securely or saving them to a browser • can describe how and why people should keep software and apps up to date • knows simple ways to increase privacy on apps or services that provide privacy • To know what a strong password is and demonstrate how to create one Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	<u>Project Evolve – Managing Online Information</u> • Can explain how search engine rankings are returned and can explain how they can be influence e.g sponsored results. • Can use a range of features to quality assure the content accessed e.g. hits, likes, comments • Can analyse and evaluate the reliability and validity of online information based on content as well as appearance.	<u>Project Evolve – Copyright</u> • Can give examples of content that is permitted to be refused and know how this content can be found online. • Can demonstrate the use of search tools to find and access online content which can be reused by others. • Can demonstrate how to make references to and acknowledge sources I have used from the internet.