Bearnes Computing Curriculum

Intent

At Bearnes, we recognise Computing as a valuable part of the children's entitlement to a broad and balanced curriculum. Computing provides the children with the opportunities to develop and extend lifelong skills, which will evolve with the rapidly changing technology in our world. Our high-quality computing curriculum aims to engage, inspire and challenge pupils, equipping them with the knowledge and skills required to be both digitally literate and digitally resilient in the modern world.

As pupils progress, they are able to think critically and creatively to develop a more rigorous understanding of computing. They will think like a computer scientist, developing their skills to digitally create and their ability to solve (debug) problems. An integral part of our Computing curriculum is Online Safety and our digital footprint where we equip the children with the knowledge, skills and confidence of how to stay safe and responsibly use the technological resources available to them and others. Opportunities for cross curicular links are embedded across all subjects. Underpinning our intent, are the National Curriculum Computing statements for Key stages 1 and 2 which is our core knowledge.

Implementation

To meet the aim of delivering a comprehensive set of substantive and disciplinary knowledge, the National Centre for Computing Education (NCCE) "Teach Computing" curriculum is followed for Years 1 to 6. This scheme has been created by subject experts and teacher feedback and is based on the latest pedagogical research. The units have been organised into an innovative progression framework where learning builds in a hierarchical fashion. Although the NCCE Teach Computing schemes of work are our core planning documents, there is flexibility to adapt the resources and foci to suit our school and cohorts, as well as to match the available software and hardware. Teachers therefore supplement their planning from other sources such as Oak Academy and Barefoot, to ensure that there is adaptive teaching. Termly planning, as well as lesson plans and resources can be downloaded from the NCCE site (note: teachers need to create a free account to do so).

Technology undoubtedly has a role to play in early years classrooms, both in preparation for the National Curriculum and within the context of a technologically advanced society. In our EYFS setting, technology is used to support and enhance the children's learning and covers all three of the computing strands.

The NCCE Teach Computing scheme covers the three computing strands: computer science, information technology and digital literacy. Digital literacy is taught alongside computer science and information technology.

Computer Science	How computers and computer systems work. How they are designed and programmed.
Information Technology	Technology in our lives and the purposeful use of existing programs to develop products and solutions.
Digital Literacy	The skills, knowledge and understanding needed to participate fully and safely in the digital world.

The learning within mixed-age classes is taught over a two-year rolling programme, to ensure extensive, varied and progressive computing curriculum coverage. It is taught weekly in half-termly blocks and units build on from one another, so that the children do not repeat content in another year. For example, in Cycle A, Autumn Term, KS1 will cover unit 1.3 Programming A – Moving a robot and then follow with unit 2.3 Programming A – Robot algorithms. Teachers ensure that there is support and challenge in every lesson through adaptive teaching. Cross-curricular computing learning is included in planning where possible. E.g. our Jigsaw programme for PSHE includes lessons on keeping safe online, in English we use Book Creator to publish our writing, in Maths we use apps such as TT Rock Stars and in Topic we create Power Points to showcase our knowledge.

We recognise that all classes have children with widely differing backgrounds, SEND and EAL needs. We aim to provide suitable learning opportunities for all children by matching the challenge of the task to the ability and experience of the child. We achieve this in a variety of ways, by:

- Using the PRIMM (predict, run, investigate, modify and make) model so that students are encouraged to talk about how and why programs work before they tackle editing and writing their own programs
- Setting common tasks which are open-ended and can have a variety of responses
- Setting tasks of increasing difficulty (with varied expectations of completion)
- Grouping children by ability in the room and setting differentiated tasks for each ability group
- Providing resources of different complexity that are matched to the ability of the child
- Using classroom assistant or teacher support to support the work of individual children or groups of children
- For sensory or physically impaired pupils, computing learning may necessitate enlarging texts, using clear fonts, using visual overlays, or audio description of images
- Teachers identify and break down the components of the subject curriculum into manageable chunks for pupils who find learning more difficult, particularly those with cognition and learning needs. These may be smaller 'steps' than those taken by other pupils to avoid overloading the working memory
- A variety of additional scaffolds may be used in lessons, such as vocabulary banks, additional visual stimuli or adult support

Impact

Learning in computing will be enjoyable, challenging and progressive. We also encourage home learning, as the children have Microsoft 365, Scratch and Canva accounts. Teachers will have high expectations and quality evidence will be presented in a variety of forms. Children will use digital and technological vocabulary accurately, alongside a progression in their technical skills. They will be confident using a range of hardware and software and will produce high-quality purposeful products. Children will see the digital world as part of their world, extending beyond school and understand that they have choices to make. They will be confident and respectful digital citizens going on to lead happy and healthy digital lives.

Progression in computing will be assessed throughout each lesson and at the end of each unit and each key stage. This will be done through the children's ability to know, apply and understand the matters, skills and processes specified in the relevant programme of study. In EYFS, evidence and assessment of learning outcomes are detailed on Tapestry, through pupil voice, observations, photographs, teacher judgement and ongoing formative assessment. For KS1 and KS2, evidence and assessment are both formative and summative. Every lesson includes formative assessment opportunities to ensure that misconceptions are recognised and addressed if they occur. Every unit includes a summative assessment framework in the form of either a multiple choice quiz or a rubic. The assessments in KS1 are mostly rubic-based as we want to ensure that we are assessing a pupil's understanding of computing concepts and skills, as opposed to their reading and writing skills. Other assessments of the children will be carried out through:

- Observing children at work during weekly computing sessions
- Teacher judgement
- Pupil voice - questioning the children in relation to their programme of study to assess their understanding and comprehension
- Photographs, work saved on Microsoft 365, Teams, Canva or on Scratch online.
- Assessment/marking the work produced by the children and discussion of their next steps. We will not just assess their final piece, but all the parts of the sequence that were essential to be established early so that the children can build on the small building blocks and be successful

Children who are working below and above unit expectations will be recorded on the long term overview to inform planning for the next teacher/unit.

EYFS			
Computing Strand	**Computer Science**	**Information Technology**	**Digital Literacy**
	Teaching computing in EYFS extends beyond document typing or coding; it involves the introduction of resources that promote the development of listening skills, curiosity, creativity and problem-solving abilities. This approach ensures that children transition to Year 1 with a solid foundation of knowledge.		
Core Knowledge	I can plan a route for a friend or robot. I can use some words like forwards and backwards to describe how I want to make a programmable toy move. I can make resources work using buttons or switches. I can give a simple set of instructions e.g. how to brush your teeth.	I can name some sources of IT from home and school. I can use a search engine to help find out information. I can play and listen to digital stories. I know that typing using a keyboard is another way of writing information. I know that digital devices can be used to create pictures. I can use a digital device to take photos, videos or play music. I can use age appropriate software. E.g. phonics bug.	I know that I can tell a trusted adult if something on my digital device upsets me. I can talk about ways to stay safe when using a digital device
Assessment	Working below:	Working below:	Working below:
	Working above:	Working above:	Working above:

KS1 Cycle A (2023/2024)	Autumn		Spring		Summer	
NCCE Teach Computing Unit Name	**1.3 Programming A – Moving a robot**	**2.3 Programming A – Robot algorithms**	**1.2 Creating Media – Digital painting**	**1.5 Creating Media – Digital writing**	**1.4 Data and Information – Grouping Data**	**2.4 Data and Information – Pictograms**
Computing Strand	**Computer Science**		**Information Technology**			
Core Knowledge	Understand what algorithms are Understand how algorithms are implemented as programs on digital devices Understand that programs execute by following precise and unambiguous instructions Create and debug simple programs Use logical reasoning to predict the behaviour of simple programs		Use technology purposefully to create, organise, store, manipulate and retrieve digital content Recognise common uses of information technology beyond school			
Unit Description	Learners will be introduced to early programming concepts. Learners will explore using individual commands, both with other learners and as part of a computer program.	This unit develops learners' understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Learners will use given commands in	Learners will develop their understanding of a range of tools used for digital painting. They then use these tools to create their own digital paintings, while gaining inspiration from a	Learners will develop their understanding of the various aspects of using a computer to create and manipulate text. They will become more familiar with using a keyboard and	This unit introduces learners to data and information. Labelling, grouping, and searching are important aspects of data and information. Searching is a common operation in	Learners will begin to understand what the term data means and how data can be collected in the form of a tally chart. They will learn the term 'attribute' and

	They will identify what each command for the floor robot does and use that knowledge to start predicting the outcome of programs. The unit is paced to ensure time is spent on all aspects of programming and builds knowledge in a structured manner. Learners are also introduced to the early stages of program design through the introduction of algorithms.	different orders to investigate how the order affects the outcome. They will also learn about design in programming. They will develop artwork and test it for use in a program. They will design algorithms and then test those algorithms as programs and debug them.	range of artists' work. The unit concludes with learners considering their preferences when painting with and without the use of digital devices.	mouse to enter and remove text. Learners will also consider how to change the look of their text and will be able to justify their reasoning in making these changes. Finally, learners will consider the differences between using a computer to create text and writing text on paper. They will be able to explain which method they prefer and explain their reasoning for choosing this.	many applications, and requires an understanding that to search data, it must have labels. This unit of work focuses on assigning data (images) with different labels to demonstrate how computers can group and present data.	use this to help them organise data. They will then progress onto presenting data in the form of pictograms and finally block diagrams. Learners will use the data presented to answer questions.
Vocabulary	algorithm, command, programming, instruction, order, debug, test, design, logical, predict, precise, sequence, turn, left, right, clockwise, anticlockwise, blocks, repeat, repeat forever, invisible, grow, shrink		tools, settings, undo, redo, text, image, size, poster, launch, application, software, window, minimise, restore, move, screen, close, click, drag, log on, log off, keyboards, keys, mouse, click, button, double click, drag, present		collect information, group, label, searching, chart, graph, data, investigate, present, pictograph, tally chart	

Assessment	Working below:	Working below:	Working below:	Working below:	Working below:	Working below:
	Working above:	Working above:	Working above:	Working above:	Working above:	Working above:
Computing Strand	**Digital Literacy**					
Core Knowledge	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					
	Learners will know what personal information is Learners will agree and follow sensible e-safety rules Learners will learn how to keep their password private and explain why Learners will know to tell an adult when they see something unexpected or worrying online and describe what it is Learners will recognise that they need to take breaks from being online Learners will talk about why it is important to be kind and polite online and in real life Learners will be able to recognise an age appropriate website Learners will understand that not everyone is who they say they are on the internet					
Vocabulary	safe, meet, accept, reliable, tell, online, trusted adult, information, personal, key, question, share, stranger danger, internet					
Assessment	Working below:					
	Working above:					

KS1 Cycle B (2024/2025)	Autumn		Spring		Summer	
NCCE Teach Computing Unit Name	**1.1 Computing Systems and Networks – Technology around us**	**2.1 Computing Systems and Networks – IT around us**	**2.2 Creating Media – Digital photography**	**2.5 Creating Media – Digital Music**	**1.6 Programming B – Programming Animations**	**2.6 Programming B – Programming Quizzes**
Computing Strand	**Information Technology**				**Computer Science**	
Core Knowledge	Use technology purposefully to create, organise, store, manipulate and retrieve digital content Recognise common uses of information technology beyond school				Understand what algorithms are Understand how algorithms are implemented as programs on digital devices Understand that programs execute by following precise and unambiguous instructions Create and debug simple programs Use logical reasoning to predict the behaviour of simple programs	
Unit Description	Learners will develop their understanding of technology and how it can help them in their everyday lives.	Learners will develop their understanding of what information technology (IT) is and will begin to identify examples.	Learners will learn to recognise that different devices can be used to capture photographs	Learners will be using a computer to create music. They will listen to a variety of pieces of music and consider	Learners will be introduced to on-screen programming through ScratchJr. Learners will explore the way a	This unit recaps on learning from 1.1 'Programming B – Programming animations'. Learners begin to understand that

KS1 Cycle B (2024/2025)	Autumn		Spring		Summer	
	They will start to become familiar with the different components of a computer by developing their keyboard and mouse skills. Learners will also consider how to use technology responsibly.	They will discuss where they have seen IT in school and beyond, in settings such as shops, hospitals, and libraries. Learners will then investigate how IT improves our world They will learn about the importance of using IT responsibly.	They will gain experience capturing, editing, and improving photos. Finally, they will use this knowledge to recognise that images they see may not be real.	how music can make them think and feel. Learners will compare creating music digitally and non-digitally. Learners will look at patterns and purposefully create music.	project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Learners will also be introduced to the early stages of program design through the introduction of algorithms.	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. Finally, learners evaluate their work and make improvements to their programming projects.
Vocabulary	filter, Google, search engine, image, keyboard, email, internet, subject, address, communicate, sender, safe, secure.		paint, colour, brush, tools, settings, undo, redo, text, image, size, poster, launch, application, software, window, minimise, restore, size, move, screen, close, click, drag, log on, log off, keyboards, keys, mouse, click, button, double click, drag, present,		algorithm, command, programming, instruction, order, debug, test, design, logical, predict, precise, sequence, modify, blocks, repeat, repeat forever, evaluate	

KS1 Cycle B (2024/2025)	Autumn		Spring		Summer	
			commands, add sound, audio, sound, video, movie, link, file format, record, stop, play			
Assessment	Working below:	Working below:	Working below:	Working below:	Working below:	Working below:
	Working above:	Working above:	Working above:	Working above:	Working above:	Working above:
Computing Strand	**Digital Literacy**					
Core Knowledge	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					
	Learners will know what personal information is Learners will agree and follow sensible e-safety rules Learners will learn how to keep their password private and explain why Learners will know to tell an adult when they see something unexpected or worrying online and describe what it is Learners will recognise that they need to take breaks from being online Learners will talk about why it is important to be kind and polite online and in real life Learners will be able to recognise an age appropriate website Learners will understand that not everyone is who they say they are on the internet					
Vocabulary	safe, meet, accept, reliable, tell, online, trusted adult, information, personal, key, question, share, stranger danger, internet					
Assessment	Working below:					
	Working above:					

LKS2 Cycle A (2023/2024)	Autumn		Spring		Summer	
NCCE Teach Computing Unit Name	3.3 Programming A – Sequencing sounds	4.6 Programming B – Repetition in games	5.3 Programming A – Selection in physical computing (INTRODUCTION)	3.2 Creating Media – Stop-frame animation	3.5 Creating Media – Desktop publishing	4.4 Data and Information – Data logging
Computing Strand	Computer Science			Information Technology		
Core Knowledge	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems Solve problems by decomposing them into smaller parts Use sequence, selection, and repetition in programs Work with variables and various forms of input and output Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs			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 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content		

LKS2 Cycle A (2023/2024)	Autumn		Spring		Summer	
Unit Description	This unit explores the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment, which will be new to most learners. 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. The unit is paced to focus on all aspects	Learners will explore the concept of repetition in programming using the Scratch environment. The unit links to 4.3, where learners can discover similarities between two environments. Learners 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.	In this unit, learners will use physical computing to explore the concept of selection in programming using the Crumble programming environment. Learners will be introduced to a microcontroller (Crumble controller) and learn how to connect and program it to control components (including output devices — LEDs and motors). Learners will be introduced to conditions as a means of controlling the flow of actions in a program. Learners will make use of their knowledge of	Learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text.	Learners 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 and improve premade documents. Learners will be introduced to the terms 'templates', 'orientation', and 'placeholders' and begin to understand how these can support them in making their own	In this unit, learners will consider how and why data is collected over time. Learners will consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Learners 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.

LKS2 Cycle A (2023/2024)	Autumn		Spring		Summer	
	of sequences, and make sure that knowledge is built in a structured manner. Learners also apply stages of program design through this unit.		repetition and conditions when introduced to the concept of selection (through the 'if...then...' structure) and write algorithms and programs that utilise this concept. To conclude the unit, learners will program a buggy to move around a set route.		template for a magazine front cover. They will start to add text and images to create their own pieces of work using desktop publishing software. Learners will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.	Learners will spend time using a computer to review and analyse data. Towards the end of the unit, learners will pose questions and then use data loggers to automatically collect the data needed to answer those questions.
Vocabulary	decompose, decomposing, logical sequence, flowchart, sprite, block, command, algorithm, answer, forward (fd), left (lt), right (rt), move, turn, clear screen (cs), variable, selection, modify, debug, count-controlled loops, infinite loops, crumble, microcontroller, LED			audio, sound, video, movie, embed, link, file format, animate, animation, still image, flip book, frame, onion skinning, loop, record, stop, play, stop motion, insert, data, database, collect, data logger, monitor, information, inaccurate, questions, record		
Assessment	Working below:	Working below:	Working below:	Working below:	Working below:	Working below:
	Working above:	Working above:	Working above:	Working above:	Working above:	Working above:

LKS2 Cycle A (2023/2024)	Autumn	Spring	Summer
Computing Strand	**Digital Literacy**		
Core Knowledge	Use technology safely, respectfully and responsibly Recognise acceptable/unacceptable behaviour Identify a range of ways to report concerns about content and contact.		
	Learners choose a secure password when I am using a website Learners talk about the way they protect themself and their friends from harm online Learners use the safety features of websites as well as reporting concerns to an adult. They understand that anything they post online can be seen by others Learners choose websites and games that are appropriate for their age Learners help friends make good choices about the time they spend online Learners talk about why they need to ask a trusted adult before downloading files and games from the internet Learners comment positively and respectfully online		
Vocabulary	safe, meet, accept, reliable, tell, online, trusted adult, information, personal, internet, world wide web, communicate, message, social media, email, password, cyberbullying/bullying, plagiarism, profiles, account, private, public		
Assessment	Working below:		
	Working above:		

LKS2 Cycle B (2024/2025)	Autumn		Spring		Summer	
NCCE Teach Computing Unit Name	**3.1 Computing Systems and Networks – Connecting computers**	**4.1 Computing Systems and Networks – The internet**	**4.2 Creating Media – Audio production**	**4.5 Creating Media – Photo editing**	**3.6 Programming B – Events and actions in programs**	**4.3 Programming A – Repetition in shapes**
Computing Strand	**Information Technology**				**Computer Science**	
	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 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content				Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems Solve problems by decomposing them into smaller parts Use sequence, selection, and repetition in programs Work with variables and various forms of input and output Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	
Unit Description	Learners will develop their understanding of digital devices, with an initial focus on	Learners will apply their knowledge and understanding of networks, to appreciate the	Learners will identify the input device (microphone) and output devices (speaker or	Learners will develop their understanding of how digital images can be changed and	This unit explores the links between events and actions, while consolidating prior learning	Learners will create programs by planning, modifying, and testing commands to create

LKS2 Cycle B (2024/2025)	Autumn		Spring		Summer	
	inputs, processes, and outputs. They will also compare digital and non-digital devices. Next, learners will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, learners will discover the benefits of connecting devices in a network.	internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet and will be given opportunities to explore the World Wide Web for themselves to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information.	headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. To record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Finally, learners will evaluate their work and give feedback to their peers.	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.	relating to sequencing. Learners begin by moving a sprite in four directions (up, down, left, and right). They then explore movement within the context of a maze, using design to choose an appropriately sized sprite. This unit also introduces programming extensions, using **Pen** blocks. Learners are given the opportunity to draw lines with sprites and change the size and colour of lines. The unit	shapes and patterns. They will use Logo, a text-based programming language.

LKS2 Cycle B (2024/2025)	Autumn		Spring		Summer	
					concludes with learners designing and coding their own maze-tracing program.	
Vocabulary	filter, Google, search engine, image, keyboard, email, subject, address, communicate, sender, safe, secure, internet, world wide web, social media		draw, object, shape, line, line colour, fill colour, group, ungroup, font, size, text box, format, image, wrap text, plan, link, image, object, link, hyperlink, minimise, restore, size, move, screen, split, create, organise, file, folder, close, exit, search, print, screenshot, snipping tool, shift, undo, redo, menu, dictionary, highlight, cursor, toolbar, spellcheck, audio, sound, video, movie, embed, link, file format		decompose, decomposing, logical sequence, flowchart, sprite, block, command, algorithm, variable, selection, modify, debug, count-controlled loops, infinite loops	
Assessment	Working below:	Working below:	Working below:	Working below:	Working below:	Working below:
	Working above:	Working above:	Working above:	Working above:	Working above:	Working above:
Computing Strand	**Digital Literacy**					
Core Knowledge	Use technology safely, respectfully and responsibly Recognise acceptable/unacceptable behaviour Identify a range of ways to report concerns about content and contact.					

LKS2 Cycle B (2024/2025)	Autumn	Spring	Summer
	Learners choose a secure password when I am using a website Learners talk about the way they protect themself and their friends from harm online Learners use the safety features of websites as well as reporting concerns to an adult. They understand that anything they post online can be seen by others Learners choose websites and games that are appropriate for their age Learners help friends make good choices about the time they spend online Learners talk about why they need to ask a trusted adult before downloading files and games from the internet Learners comment positively and respectfully online		
Vocabulary	safe, meet, accept, reliable, tell, online, trusted adult, information, personal, internet, world wide web, communicate, message, social media, email, password, cyberbullying/bullying, plagiarism, profiles, account, private, public		
Assessment	Working below:		
	Working above:		

UKS2 Cycle A (2023/2024)	Autumn		Spring		Summer	
NCCE Teach Computing Unit Name	**5.3 Programming A – Selection in physical computing**	**6.3 Programming A – Variables in games**	**5.2 Creating Media – Video production**	**6.2 Creating Media – Web page creation**	**5.4 Data and Information – Flat-file databases**	**6.4 Data and Information – Introduction to spreadsheets**
Computing Strand	**Computer Science**		**Information Technology**			
Core Knowledge	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems Solve problems by decomposing them into smaller parts Use sequence, selection, and repetition in programs Work with variables and various forms of input and output Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs		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 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content			
Unit Description	In this unit, learners will use physical computing to explore the concept of selection in programming using the	This unit explores the concept of variables in programming through games in Scratch.	Learners will learn how to create short videos by working in pairs or groups.	Learners will be introduced to creating websites for a chosen purpose.	This unit looks at how a flat-file database can be used to organise data in records.	This unit introduces the learners to spreadsheets.

	Crumble programming environment. Learners will build on their previous knowledge from LKS2 Cycle A of how a microcontroller (Crumble controller) works. Learners will use conditions as a means of controlling the flow of actions in a program. Learners will make use of their knowledge of repetition and conditions and write algorithms and programs that utilise this concept. To conclude the unit, learners will design and make a working model of a fairground carousel that will demonstrate their understanding of how the microcontroller and	First, learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, learners experiment with variables in an existing project, then modify them, before they create their own project. In Lesson 4, learners focus on design. Finally, in Lesson 6, learners apply their knowledge of variables and design to improve their games in Scratch.	As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video. Learners are guided with step-by-step support to take their idea from conception to completion. At the conclusion of the unit, learners can reflect on and assess their progress in creating a video.	Learners 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.	Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question and present their work to others.	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 range of cells and apply formulas to multiple cells by duplicating them.

	its components are connected, and how selection can be used to control the operation of the model. Throughout this unit, learners will apply the stages of programming design.					Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.
Vocabulary	microcontroller, algorithm, control, output, loop, backdrop, script, block, repeat, sequence, consequence, debug, program, variable, design, selection, modify		audio, record, edit, play stop, skip, waveform, input, output, record, edit, play podcast, digital content, downloadable, backing track, voiceover, mute, gain, production, post-production, documentary, project, evaluation, screening, upload		insert, table, spreadsheet, cell, row, column, formula/formulas, calculate, format, edit, insert, ascending, descending	
Assessment	Working below:	Working below:	Working below:	Working below:	Working below:	Working below:
	Working above:	Working above:	Working above:	Working above:	Working above:	Working above:
Computing Strang	**Digital Literacy**					
Core Knowledge	Use technology safely, respectfully and responsibly Recognise acceptable/unacceptable behaviour Identify a range of ways to report concerns about content and contact.					
	Learners can protect their password and other personal information Learners can explain the consequences of sharing too much information about themselves online					

	Learners can support their friends to protect themselves and make good choices online, including reporting concerns to an adult Learners can explain the consequences of spending too much time online or on a game Learners can explain the consequences to themself and others of not communicating kindly and respectfully Learners can protect their computer or device from harm on the internet
Vocabulary	spam, link, privacy, virus, scam, phishing, inbox, junk, sender, subject, secure, safe, account, online, private/personal, social media, adverts, cyberbullying, reporting, anonymous, victim, fraud/fraudulent, policy
Assessment	Working below:
	Working above:

UKS2 Cycle B (2024/2025)	Autumn		Spring		Summer	
NCCE Teach Computing Unit Name	**5.1 Computing Systems and Networks – Systems and searching**	**6.1 Computing Systems and Networks – Communication and collaboration**	**5.5 Creating Media – Introduction to vector graphics**	**6.5 Creating Media – 3D Modelling**	**5.6 Programming B – Selection in quizzes**	**6.6 Programming B – Sensing movement**
Computing Strand	**Information Technology**				**Computer Science**	
Core Knowledge	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 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content				Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems Solve problems by decomposing them into smaller parts Use sequence, selection, and repetition in programs Work with variables and various forms of input and output Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	
	Learners develop their understanding of computer systems and how information is transferred	In this unit learners explore how data is transferred over the internet.	In this unit, learners start to create vector drawings. They learn how to use different drawing	Learners will develop their knowledge and understanding of using a computer	Learners will develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming,	This unit is the final KS2 programming unit and brings together elements of all the four

UKS2 Cycle B (2024/2025)	Autumn		Spring		Summer	
	between systems and devices. Learners consider small-scale systems as well as large-scale systems. They explain the input, output, and process aspects of a variety of different real-world systems. Learners discover how information is found 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.	Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet.	tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.	to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, learners will examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their	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 in the Scratch programming environment. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They use this knowledge to design a quiz in response to a given task and	programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6.3. If this hasn't been covered, ensure adaptive teaching is present) 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

UKS2 Cycle B (2024/2025)	Autumn		Spring		Summer	
				own 3D model of a building.	implement it as a program. To conclude the unit, learners evaluate their program by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved.	to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.
Vocabulary	world wide web, search, search engine, advanced search, results, Google, browser, terms of use, bias, authority, citation, plagiarism, source, website, secure, https, site, domain, website, browser, address bar		window, layout, text, font, colour, format, heading, hyperlink, 2D shape, 3D shape, orbit, pan, zoom, eraser, dimension, measurement		algorithm, control, conditions, process, decision, loop, script, repetition, selection, variable, sequence, consequence, debug, program, evaluate, microbit	
Assessment	Working below:	Working below:	Working below:	Working below:	Working below:	Working below:
	Working above:	Working above:	Working above:	Working above:	Working above:	Working above:
Computing Strand	**Digital Literacy**					
Core Knowledge	Use technology safely, respectfully and responsibly Recognise acceptable/unacceptable behaviour					

UKS2 Cycle B (2024/2025)	Autumn	Spring	Summer
	Identify a range of ways to report concerns about content and contact.		
	Learners can protect their password and other personal information Learners can explain the consequences of sharing too much information about themselves online Learners can support their friends to protect themselves and make good choices online, including reporting concerns to an adult Learners can explain the consequences of spending too much time online or on a game Learners can explain the consequences to themself and others of not communicating kindly and respectfully Learners can protect their computer or device from harm on the internet		
Vocabulary	spam, link, privacy, virus, scam, phishing, inbox, junk, sender, subject, secure, safe, account, online, private/personal, social media, adverts, cyberbullying, reporting, anonymous, victim, fraud/fraudulent, policy		
Assessment	Working below:		
	Working above:		

APPENDIX 1

Information Technology Progression

Data and information – 2 year

	Year 1/2	Year 3/4	Year 5/6
Cycle A	Grouping Data (Y1)	Branching Databases (Y3)	Flat-File Databases (Y5)
	Pictograms (Y2)	Data Logging (Y4)	Spreadsheets (Y6)
Cycle B			

Year	Data and information progression	
1	**Grouping data**	Sorting objects into groups based on properties
2	**Pictograms**	Using attributes to organise data. Creating pictograms and block diagrams.
3	**Branching databases**	Understanding branching databases. Developing understanding of attributes.
4	**Data logging**	Consider data over time. Use input devices and sensors. Review and analyse data.
5	**Flat-file databases**	Organise data in records. Create graphs and charts to solve problems
6	**Spreadsheets**	Creating data sets. Importance of formatting data. Using formulas to produce calculated data.

Computing systems and networks – 2 year

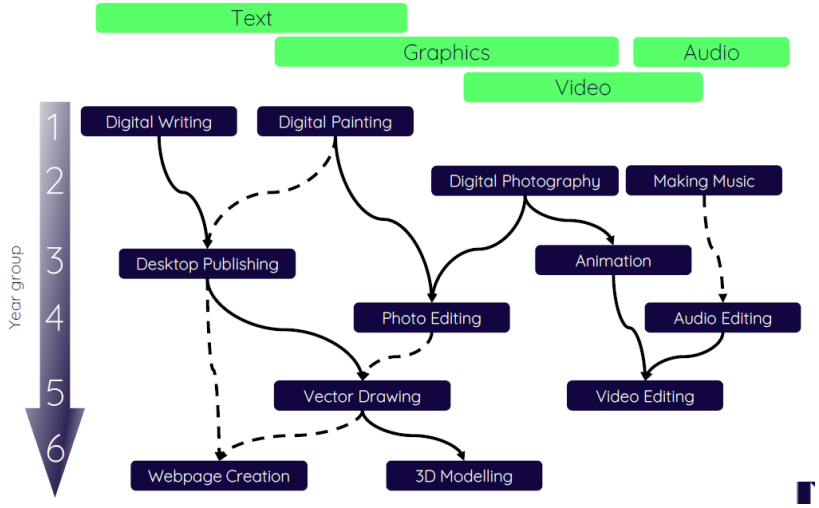
	Year 1/2	Year 3/4	Year 5/6
Cycle A			
Cycle B	Technology Around Us (Y1)	Connecting Computers (Y3)	Systems and Searching (Y5)
	IT Around Us (Y2)	The Internet (Y4)	Communication and Collaboration (Y6)

Year	Computer systems and networks progression	
1	**Technology around us**	Recognising technology around us. Using the keyboard and mouse.
2	**IT around us**	Recognising information technology. Discussing responsible use of IT.
3	**Connecting computers**	Understanding digital devices and how they work. Recognising computers are connected within a network.
4	**The internet**	Recognising the internet as a network of networks. Evaluating online content.
5	**Systems and searching**	How computing systems share information. How search engines work.
6	**Communication and collaboration**	How the internet works. How it facilitates online communication and collaboration.

Creating media

	Year 1/2	Year 3/4	Year 5/6
Cycle A	Digital Painting (Y1)	Stop-Frame Animation (Y3)	Video Production (Y5)
	*Digital Writing (Y1)**	Desktop Publishing (Y3)	Web Page Creation (Y6)
Cycle B	Digital Photography (Y2)	Audio Production (Y4)	Vector Drawing (Y5)
	Digital Music (Y2)	Photo Editing (Y4)	3D Modelling (Y6)

Creating media progression



APPENDIX 2
Computer Science Progression

In KS2 for each unit, ensure that you provide opportunities to move through sequence -> repetition -> selection/variables.
You can include units from outside Teach Computing curriculum to support this e.g. micro:bit foundation, Oak Academy.
You will need to ensure there is enough challenge in the earlier unit for older learners. An approach such as paired programming may support with this.

	Year 1/2	Year 3/4	Year 5/6
Cycle A	Moving a Robot (Y1)	Sequencing Sounds (Y3)	Selection in Physical Computing (Y5)
	Robot Algorithms (Y2)	Repetition in Games (Y4)	Variables in Games (Y6)
Cycle B	Programming Animations (Y1)	Events and Actions in Programs (Y3)	Selection in Quizzes (Y5)
	Programming Quizzes (Y2)	Repetition in Shapes (Y4)	Sensing Movement (Y6)