Progression of Skills Computing

Curriculum Intent:

A high-quality computing education equips pupils to use creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. At Highfield, we will ensure children become digitally literate so that they are able to express themselves and develop their ideas through information and computer technology– at a level suitable for the future workplace and as active participants in a digital world.

We intend to **build a computing curriculum that prepares pupils to live safely in an increasingly digital British society where p**upils can understand the importance of staying safe online. We believe children need to understand how the digital world around them works, and to develop their understanding of algorithms, thinking sequentially and problem solving. We believe children need to be equipped with the means to keep themselves safe online and evaluate risks. We also believe in the importance of developing them to be responsible digital citizens.

Assessment Points:

Programming

E-Safety

Curriculum Implementation:

At Highfield, computing is taught using a blocked curriculum approach as well as integrated into every day teaching and learning. Teachers use the subject progression ladder to ensure effective progression; this ensures children are able to develop depth in their knowledge and skills over the duration of each of their computing topics. Knowledge and skills are mapped across each topic and year group to ensure systematic progression. Teachers use the subject progression ladders to ensure skills and knowledge are incremental year on year. We have a computing suite at the juniors and three class sets of iPads to ensure that all year groups have the opportunity to use a range of devices and programs for many purposes across the wider curriculum, as well as in discrete computing lessons. Employing cross-curricular links motivates pupils and supports them to make connections and remember the steps they have been taught.

The implementation of the curriculum also ensures a balanced coverage of computer science, information technology and digital literacy. The children will have experiences of all three strands in each year group, but the subject knowledge imparted becomes increasingly specific and in depth, with more complex skills being taught, thus ensuring that learning is built upon.

Highfield have a robust E-Learning policy which can be used in case of closures or to enhance home-learning. The use of 'Showbie' is used in the juniors within the curriculum and 'Google Classroom' is used for infants.

Curriculum Impact:

Our approach to the curriculum results in a fun, engaging, and high-quality computing education. The quality of children's learning is evident on Showbie, a digital platform where pupils can share and evaluate their own work, as well as that of their peers. Evidence such as this is used to feed into teachers' future planning, and as a topic-based approach continues

to be developed, teachers are able to revisit misconceptions and knowledge gaps in computing when teaching other curriculum areas. This supports varied paces of learning and ensures all pupils make good progress.
Much of the subject-specific knowledge developed in our computing lessons equip pupils with experiences which will benefit them in secondary school, further education and future workplaces. From research methods, use of presentation and creative tools and critical thinking, computing at William Patten gives children the building blocks that enable them to pursue a wide range of interests and vocations in the next stage of their lives.
As children progress throughout the school, they develop a deep knowledge, understanding an appreciation of technology. SEN pupils are carefully considered and adaptations are made to ensure that they are included and well supported. Data is collected at the end of the school year and recorded on SIMS so teachers can see year on year which pupils are exceeding, met or working below national expectation.

Cultural Capital

Our curriculum also aims to broaden our pupil's cultural capital. By providing them with an understanding of a broad range of technology, teaching them access to the internet, software and hardware safely and in a way that serves their own needs, they will be able to go on to be successful members of a society that requires a knowledge of computing and technology to fully participate.

	Year R	Year ½	Year ¾	Year 5/6
Algorithms/ Programming Objectives	Provide a range of programmable toys, as well as equipment involving ICT, such as computers. (Beebot and Beebot app)	General ● Say what an Algorithm is ● Check their work for mistakes (delay) ● Plan and Check an algorithm Beebot ● Write and follow step by step instructions (Can be pictorial) ● Program a Beebot to reach a destination	General ● Debug a program they have written ● Write a program that achieves a goal (e.g. draws a shape or pattern) ● Write a program that includes a logical sequence Logo/Scratch ● Create and debug algorithms to draw regular polygons using repeat command/block	General ● Decompose code into smaller parts and explain it in their own words. ● Use ideas from existing codes to adapt and write their own programs. ● View existing code and explain how it works. Scratch

		Logo/Turtle ● Draw different lines of different lengths using the FD command ● Turn the Turtle using rt90 and lt90 ● Draw squares and rectangles SkratchJR ● Use different end blocks ● Change the size of characters ● Program two or more characters with instructions	● Change and alter the pen settings ● Draw using setpos and setxy ● Fill shapes with different colours ● Use repletion and selection ● Understand the duplicate function ● Work with variables and adjust depending on the effect they want to create ● Create and debug algorithms to draw patterns by repeating regular polygons	● Move and edit blocks as part of an algorithm ● Program an algorithm as a sequence of game instructions with actions and consequences. ● Add additional effects and features, such as sound or point scoring, to enhance the appeal of a game ● Animate characters with movement and speech in a story scene. ● Use broadcast and receive blocks correctly in code. ● Use show and hide blocks correctly in code. ● Use rapid costume changes to give an animation effect. ● Program the use of a single button to control background changes. ● Control smooth transitions between characters, scenes and audio. Kodu

				• Open Kodu and navigate the programming environment using keyboard or mouse. • Add objects to a world and program them using When and Do instructions. • Plan and design the features of an original virtual environment. • Program a character to move around a track. • Create a path for a character to follow. • Create unique worlds with particular attention to detail in the addition of appropriate objects. • Edit and refine a race track design to improve playability. • Adjust character and path settings to create an appealing game. • Follow instructions given in the Kodu programming environment. • Describe the actions of a sequence of Kodu commands. • Use tools to change the size of the ground and raise or lower the landscape.

				• Decompose code into smaller parts and explain it in their own words. • Create a race track with an end goal for a game. • Program a character to follow a path. Flowol • Follow written instructions to draw a simple flowchart. • Insert symbols into a flowchart. • Add inputs into a flowchart. • Identify conventional symbols, • Solve a given problem independently with a flowchart solution, organized into multiple subroutines. • Create a program to control a sequence with variables. • Create a program to control a simple sequence. • Modify symbols in a flowchart for effect. • Create flowcharts for multiple inputs and outputs. • Use decisions and subroutines.

				• Program inputs and outputs.
	Left, right, forward, back, go, green button, beebot, programme, app	**Algorithm, program, debug, repeat, sprite, code, instructions, commands, block, move, green flag,** Left, right, forward, back, go, green button, beebot, programme, app	Algorithm, **Variable, procedure**, instructions, commands (fd, bk, rt, lt, cs, move, turn, pen up, pen down) **calculations**, sprite, block, **background or backdrop**, green flag, key press, pen, repeat. **online**, **decompose**, **logical sequence**, **flowchart**, errors, code	Algorithm, sprite, backdrop, **script**, block, **events**, **sequence**, **gradient**, **fill**, **levels**, repeat, **costume, score,** variable, code. **Animate, animation**, repeat, **iteration**, debug, **broadcast**, **deconstruct**, **transition**, **record**, **interactive**, **user**. **object**, **toolbox**, **smooth**, **flatten**, **character**, **node**, **bump**, **flowchart, control, output, mimic, simulation, insert, symbol, delay, process, decision, input loop, subroutine**.
Communication/Internet Objectives		Find sites/Blog (Seesaw?) • search using the words "for kids"; • identify search results that will give some useful information; • know where to find the address of a link; • recognise common websites to which search results are linked; • follow a weblink; • locate their own blog; • understand how to blog safely and responsibly. • upload photos to a blog.	Search Engines • They will know how to bookmark or favourite a page and name different types of online communication. • Children will know what to do if they feel uncomfortable when communicating online. • They will be able to identify how they should behave online • Identify which word order gives the better results when searching online and be able to support this with examples. • They will be able to share a webpage with others.	Websites • Comment on the features and layout of a webpage. • Create a new webpage with a chosen layout and format text in the webpage. • Independently search for images that can be used in documents. • Insert and format an image in a webpage. • Independently create a hyperlink. • Learn how to share a webpage so it can be viewed by anyone. • Use the advanced features of Google's web search

		• log in and post a blog or comments	• Children will be able to research the different types of online communication used by their peers • Children will know how and why online activity leaves a digital footprint.	• Understand and explain bias and authority in webpages. • Know how to use the different share settings in Google Sites
		Weblink, internet, search, search engine, address, blog, post	**Internet, World Wide Web (WWW), search, search engine, results, browser, key words, message, social media, email, tweet, attachment**	Internet, World Wide Web (WWW), search, search engine, results, Google, browser, website, terms of use, hyperlink, bias, authority
Digital Literacy Objectives		Word Processing • Type with two hands. • Use shift, space and enter correctly. • Use undo and redo. • Make text bold, italic or underline. • Save their work in their folder. • Edit text using backspace, delete and the arrow keys. • Format the font. • Select single words • Have some knowledge of the location of letters and symbols on the keyboard. • Select text in different ways.	General • Create files • Save work • Locate saved work Word Processing. • Select text in different ways. • Change case. • Align text. • Cut, copy and paste text. • Insert images. • Copy a screenshot into another application. • Use <ctrl> keyboard shortcuts. • Format images. • Use the Snipping Tool.	Radio • Record and play their own sounds in recording software • Import an existing sound file into recording software to play • Choose appropriate software for sound recording • Plan and record a radio advert Assessment Statements • Enhance sound recordings using software effects • Be discerning about the digital content of existing sound files and their suitability • Rehearse and improve script ideas based on their own evaluation • Present audio information confidently and clearly

		Book Creator • Insert pages, add and type in a text box • Share completed work • Add images, sounds and drawings • Format text and text boxes • Search for files on the computer. • Set windows side by side. • Reorder pages and present their Presentation	• Use bullets and numbering effectively. • Insert and format text boxes effectively. • use the spellcheck tool; • change the size of the page. • change a homophone that is in the incorrect form; • format the borders of the cells within a table; • apply their knowledge of tools and techniques to improve the layout of a document; • change the background colour of the page; • add a spelling to the spelling dictionary; • insert a simple table; • add or delete rows or columns in a table; • suggest ways to change a table; • create a hyperlink. DTP (Publisher) ● Draw objects ● Insert Text Boxes ● Order and group objects	• Listen to and improve on their own recordings by re-recording • Locate and download existing sound files to be imported into recording software • Combine two or more tracks to make a new, original recording • Plan and record appropriate audio content for a podcast • Evaluate what makes good quality audio content Film • plan and write a script using appropriate software; • search for relevant information using appropriate websites; • use a digital video camera (or similar device) to record; • plan suitable questions to ask an interviewee; • import video files into video editing software. • structure the timing of sections to meet a given running time; • cross-check information using different sources; • use a variety of camera angles and shots to record;

			Presentation (Powerpoint) ● Create a simple presentation ● Create shapes ● Use slide Transitions ● Insert audio and video files ● Plan a branching Story ● Create simple slide templates ● Copy and organise slides as required Animation • Explain what is meant by animation. • Describe one or more traditional methods of animation. • Create a series of linked frames that can be played as a short animation. • Control and adjust a time slider to locate a different point in a film clip. • Insert images to create a simple stop-motion animation short film clip. • Edit and refine still images with multiple layers of onion skins. • Make extensive use of a time slider to animate multiple objects simultaneously. • Use webcam or digital camera to create their own images for a	• improvise and react to responses by an interviewee; • preview a movie project using software and refine, based on the preview; • plan additional elements for film-making such as locations and props; • evaluate whether information is reliable or not; • speak clearly into the camera when being recorded; • frame an appropriate filming shot when interviewing; Spreadsheets • Enter text and numbers into a spreadsheet. • Identify and refer to cells by row and column. • Begin to enter formulae with the SUM function. • Be able to enter formulae into cells. • Understand the advantages of spreadsheets over comparative manual methods. • Select data and create graphs with appropriate formatting. • Design their own spreadsheet for a specific purpose and present it appropriately.

			stop-motion animation short film clip.	• Edit data and discuss the effect on results. • Use further functions including AVERAGE, MIN and MAX. • Design their own spreadsheet for a specific purpose. Sketch Up: • Draw 2D shapes or lines. • Draw simple 3D models. • Manipulate 2D shapes into 3D shapes. • Import 3D models from the 3D warehouse. • Use a range of SketchUp tools including: shape, push, pull, orbit, pan, zoom, erase and fill. • Independently use a wide range of SketchUp tools and concepts including: making groups and components, offset, inference, arc, scale and follow me (only on the large toolbar). • Use inference points to draw lines and shapes.
		Keyboard, key, shift, space bar, undo, redo, select, format, bold, italics, underline, font, size,	Select, format, **effective, snipping tool, bullets and numbering, insert, text box, cut,** copy**, paste,** font, images**, screenshot, shortcuts,** bold, italic, underline**, table, rows,**	**audio, record, edit, play stop, skip, waveform, input, output, backing track, voiceover, mute, gain. 2D shape, 3D shape, rectangle, push/**

		colour, Print, Image, picture, photo, format, insert, copy,	**columns, hyperlink, spell check, homophone, borders, cell, shading, toolbar, Transitions, slides. Animation, frames, onion skins, time slider, edit, refine, frame rate.**	**pull, orbit, pan, zoom, inference. Spreadsheet, function, formulae, AVERAGE, MIN and MAX.**
Safeguarding (E-safety Objectives)	Internet safety Close box if needed Talk about adverts	• begin to identify possible dangers online; • identify websites suitable for their age; • know when to ask an adult for advice about accessing a website; • know what to do if a website makes them uncomfortable; • talk about what people might want to know about a website; • give their opinion about a website; • say what they like and dislike about a website; • begin to consider who a website could be aimed at; **• identify unkind online behaviour;** • know what to do if they think someone is being unkind to them online;	**• recognise cyberbullying;** • identify a safe person to tell if they encounter cyberbullying; • know that cyberbullying can happen via a range of devices; • identify adverts online; • identify a targeted advert; • explore how companies use websites to promote products; • create a strong password; • explain why a strong password is important; • explain what privacy settings are; • discuss email as a form of communication; • identify an email that they should not open; • write an email with an address and subject; • know how to safely send an email; • know how to safely receive an email; • identify online communities they are a part of;	**• say what bullying and cyberbullying are;** • say how people should deal with cyberbullying; • understand why I should ask an adult if I am unsure; • identify warning signs that a website might not be secure; • identify personal information; • explain what to do if I am asked or told something online which makes me uncomfortable; • explain some of the dangers of revealing personal information to an online friend; • choose an appropriate action online to stay safe; • identify a situation I should be careful in online; • understand how a stereotype can be harmful. • look in the address bar of a website so check for

		• know how to safely search for information online; • choose appropriate websites for their age.	• identify different forms of online communication; • discuss what they have learnt about online safety; • use what they know about online safety to plan a party using online methods. • know how to respond to a hurtful message or comment online; • access a trusted search engine; • understand that different search terms give different results; • know what plagiarism is; • identify which information to keep private online; • explain what digital citizenship is; • tell someone else at least one way to stay safe online.	security; • identify the lock symbol in an address bar; • explain why someone might have an online friendship; • explain what the SMART acronym means; • explain what a stereotype is; • compare gender stereotypes.
		Website, safety, behaviour, reporting, online	Digital citizenship, search engine, email, plagiarism, strong password, cyberbullying, advertising	Cyberbullying, personal information, secure websites, online friendships, gender stereotypes