



ICT & COMPUTING

**Curriculum Intent, Implementation and
Impact for Computing at Co-op Academy
Broadhurst**

Why is Computing an important part of the curriculum at Broadhurst?

Through teaching computing we aim to equip our children to participate in a world where work and leisure activities are increasingly transformed by technology.

It is our intention to enable children to find, explore, analyse, exchange and present information. We also focus on developing the skills necessary for children to be able to use information in an effective way.

Computing can be hands on, it can breed resilience. It develops problem solving skills, and it opens a student's eyes to the digital world. This can engage, enthuse and cause a real spark in students,

Computing skills are a major factor in enabling children to be confident, creative and independent learners and it is our intention that children have every opportunity available to allow them to achieve this.

Our Computing curriculum will ensure that pupils become digitally literate, and it will prepare our children for a 21st century workplace and to be active participants in a digital world.

What are the key principles of the Computing Curriculum?

- Understanding and applying key concepts of computer science
- Analysing problems in computational terms
- Solving problems
- Evaluating and applying ICT including new or unfamiliar technologies
- Being responsible, confident and creative users of ICT
- Writing simple computer programs
- Children are equipped with lifelong skills to prepare them for a future workplace
- Children are active participants in a digital world

What are the Key Strands in Computing at Broadhurst?

Computing systems and networks	Creating Media	Programming
<ul style="list-style-type: none"> ■ Computer networks — Understand how networks can be used to retrieve and share information, and how they come with associated risk ■ Computer systems — Understand what a computer is, and how its constituent parts function together as a whole ■ Effective use of tools — Use software tools to support computing work 	<ul style="list-style-type: none"> ■ Creating media — Select and create a range of media including text, images, sounds, and video ■ Design and development — Understand the activities involved in planning, creating, and evaluating computing artefacts ■ Effective use of tools — Use software tools to support computing work 	<ul style="list-style-type: none"> ■ Algorithms — Be able to comprehend, design, create, and evaluate algorithms ■ Design and development — Understand the activities involved in planning, creating, and evaluating computing artefacts ■ Effective use of tools — Use software tools to support computing work
Data and Information	E Safety	
<ul style="list-style-type: none"> ■ Data and information — Understand how data is stored, organised, and used to represent real-world artefacts and scenarios 	<ul style="list-style-type: none"> ■ Impact of technology — Understand how individuals, systems, and society as a whole interact with computer systems 	

What does the ICT and Computing curriculum look like at Broadhurst?

Computing Curriculum

At Broadhurst we follow the Teach Computing Scheme to inform our teaching and learning. The use of the MTP and STP ensure progressions throughout the curriculum. The curriculum includes the main strands of Computing: Computing systems and Networks, Creating Media, Programming and Data and Information. Short term plans are adapted by class teachers to ensure learning is relevant to individuals and the needs of the cohort.

Online Safety

The unit overviews for each unit show the links between the content of the lessons and the national curriculum and Education for a Connected World framework. These references show where aspects relating to online safety, or digital citizenship, are covered within the Teach Computing Curriculum. Safety online also forms part of the PSHE curriculum and is a focus for National Online Safety week.

Online Safety is regularly promoted with parents and carers to support learning in school.

What does the delivery of the Computing curriculum look like at Broadhurst?

Computing Teaching

Computing is allocated 1 hour a week in the timetable. This is to deliver the Teach Computing Curriculum to ensure coverage and progression of the knowledge and skills required.

Additional sessions are linked to other areas of the curriculum to consolidate and practise skills. ICT is also used to enhance learning, research, publishing etc.

Google Classroom is the platform used at Broadhurst to assign learning as well as completing and storing children's work.

Extra Curricular Opportunities

Robot/ Coding Club

Google Classroom-Homework

Curriculum Enhancements

City in the Community- ICT sessions with Year 3 (6 Weeks)

Year 5- Global Scholars Project

How do we plan for progression of knowledge and skills within Computing at Broadhurst?

- The curriculum identifies points where comparisons can be made
- Key concepts are revisited year on year to consolidate pupils understanding
- Knowledge that is taught builds on prior learning and is therefore more in-depth
- Increasing complexity of subject specific language and precision is expected
- Teach Computing scheme of work is used which shows clear progression in year groups
- Children gain confidence in using information technology and developing their ideas further

How do we plan for progression of knowledge and skills within Computing at Broadhurst?

Within the Teach Computing Curriculum, every year group learns through units within the same four themes, which combine the ten strands of the National Centre for Computing Education’s taxonomy. This approach allows us to use the spiral curriculum approach to progress skills and concepts from one year group to the next. This means that each of the themes is revisited regularly (at least once in each year group), and pupils revisit each theme through a new unit that consolidates and builds on prior learning within that theme. This style of curriculum design reduces the amount of knowledge lost through forgetting, as topics are revisited yearly.

Primary themes	Computing systems and networks	Programming	Data and information	Creating media
Taxonomy strands	Computer systems	Programming	Data and information	Creating media
	Computer networks	Algorithms		Design and development
		Design and development		
	Effective use of tools			
	Impact of technology			
	Safety and security			

How do we plan for coverage of knowledge and skills within Computing at Broadhurst?

Key Stage 1

National Curriculum Coverage – Years 1 and 2											
	1.1 Technology around us	1.2 Digital painting	1.3 Moving a robot	1.4 Grouping data	1.5 Digital writing	1.6 Programming animations	2.1 Information technology around us	2.2 Digital photography	2.3 Robot algorithms	2.4 Pictograms	2.5 Making music
Understand what algorithms are, how they are implemented as programs on digital devices, and 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	✓		✓				✓	✓			
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	✓			✓	✓		✓	✓	✓	✓	

How do we plan for coverage of knowledge and skills within Computing at Broadhurst?

Lower Key Stage 2

National curriculum coverage - Years 3 and 4	3.1 Connecting computers	3.2 Stop-frame animation	3.3 Sequencing sounds	3.4 Branching databases	3.5 Desktop publishing	3.6 Events and actions in programs	4.1 The internet	4.2 Audio production	4.3 Repetition in shapes	4.4 Data logging	4.5 Photo editing	4.6 Repetition in games
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			✓			✓			✓			✓
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					✓		✓	✓			✓	
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		✓		✓			✓	✓			✓	

How do we plan for coverage of knowledge and skills within Computing at Broadhurst?

Upper Key Stage 2

National curriculum coverage - Years 5 and 6	5.1 Sharing information	5.2 Video production	5.3 Selection in physical computing	5.4 Flat-file databases	5.5 Vector drawing	5.6 Selection in quizzes	6.1 Internet communication	6.2 Webpage creation	6.3 Variables in games	6.4 Introduction to spreadsheets	6.5 3D modelling	6.6 Sensing
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			✓			✓			✓			✓
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		✓		✓				✓				
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	✓	✓						✓	✓		✓	

How do we plan for progression of knowledge and skills within Computing at Broadhurst?

	KS1	LKS2	UKS2
Computer systems and Networks	<p>YEAR 1</p> <ul style="list-style-type: none"> explain how these technology examples help us explain technology as something that helps us locate examples of technology in the classroom" name the main parts of a computer switch on and log into a computer use a mouse to click and drag" click and drag to make objects on a screen use a mouse to create a picture use a mouse to open a program" save my work to a file say what a keyboard is for type my name on a computer" delete letters open my work from a file use the arrow keys to move the cursor" discuss how we benefit from these rules give examples of some of these rules identify rules to keep us safe and healthy when we are using technology in and beyond the home <p>YEAR 2</p> <ul style="list-style-type: none"> describe some uses of computers identify examples of computers identify that a computer is a part of IT identify examples of IT identify that some IT can be used in more than one way sort school IT by what it's used for find examples of information technology sort IT by where it is found talk about uses of information technology demonstrate how IT devices work together recognise common types of technology say why we use IT list different uses of information technology say how rules can help keep me safe talk about different rules for using IT explain the need to use IT in different ways identify the choices that I make when using IT use IT for different types of activities 	<p>YEAR 3</p> <ul style="list-style-type: none"> explain that digital devices accept inputs explain that digital devices produce outputs follow a process classify input and output devices describe a simple process design a digital device explain how I use digital devices for different activities recognise similarities between using digital devices and non-digital tools suggest differences between using digital devices and non-digital tools discuss why we need a network switch explain how messages are passed through multiple connections recognise different connections demonstrate how information can be passed between devices explain the role of a switch, server, and wireless access point in a network recognise that a computer network is made up of a number of devices identify how devices in a network are connected together identify networked devices around me identify the benefits of computer networks <p>YEAR 4</p> <ul style="list-style-type: none"> demonstrate how information is shared across the internet describe the internet as a network of networks discuss why a network needs protecting describe networked devices and how they connect explain that the internet is used to provide many services recognise that the World Wide Web contains websites and web pages describe how to access websites on the WWW describe where websites are stored when uploaded to the WWW explain the types of media that can be shared on the WWW" explain that internet services can be used to create content online explain what media can be found on websites recognise that I can add content to the WWW explain that there are rules to protect content explain that websites and their content are created by people suggest who owns the content on websites explain that not everything on the World Wide Web is true explain why I need to think carefully before I share or reshare content explain why some information I find online may not be honest, accurate, or legal 	<p>YEAR 5</p> <ul style="list-style-type: none"> describe that a computer system features inputs, processes, and outputs explain that computer systems communicate with other devices explain that systems are built using a number of part explain the benefits of a given computer system identify tasks that are managed by computer systems identify the human elements of a computer system explain that data is transferred over networks in packets explain that networked digital devices have unique addresses recognise that data is transferred using agreed methods explain that the internet allows different media to be shared recognise that connected digital devices can allow us to access shared files stored online send information over the internet in different ways compare working online with working offline make thoughtful suggestions on my group's work suggest strategies to ensure successful group work explain how the internet enables effective collaboration identify different ways of working together online recognise that working together on the internet can be public or private <p>YEAR 6</p> <ul style="list-style-type: none"> compare results from different search engines complete a web search to find specific information refine my search explain why we need tools to find things online recognise the role of web crawlers in creating an index relate a search term to the search engine's index explain that a search engine follows rules to rank relevant pages explain that search results are ordered suggest some of the criteria that a search engine checks to decide the order of results describe some of the ways that search results can be influenced explain how search engines make money recognise some of the limitations of search engines choose methods of communication to suit particular purposes explain the different ways in which people communicate identify that there are a variety of ways of communicating over the internet compare different methods of communicating on the internet decide when I should and should not share explain that communication on the internet may not be private

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	KS1	LKS2	UKS2
Creating Media	<p>YEAR 1</p> <p>DIGITAL PAINTING</p> <ul style="list-style-type: none"> draw lines on a screen and explain which tools I used make marks on a screen and explain which tools I used use the paint tools to draw a picture" make marks with the square and line tools use the shape and line tools effectively use the shape and line tools to recreate the work of an artist" choose appropriate shapes create a picture in the style of an artist make appropriate colour choices" choose appropriate paint tools and colours to recreate the work of an artist say which tools were helpful and why know that different paint tools do different jobs" change the colour and brush sizes make dots of colour on the page use dots of colour to create a picture in the style of an artist on my own" explain that pictures can be made in lots of different ways say whether I prefer painting using a computer or using paper spot the differences between painting on a computer and on paper" <p>DIGITAL WRITING</p> <ul style="list-style-type: none"> identify and find keys on a keyboard open a word processor recognise keys on a keyboard" enter text into a computer use backspace to remove text use letter, number, and space keys" explain what the keys that I have learnt about already do identify the toolbar and use bold, italic, and underline type capital letters" change the font select all of the text by clicking and dragging select a word by double-clicking" decide if my changes have improved my writing say what tool I used to change the text use 'undo' to remove changes" explain the differences between typing and writing make changes to text on a computer say why I prefer typing or writing 	<p>YEAR 3</p> <p>ANIMATION</p> <ul style="list-style-type: none"> create an effective flip book—style animation draw a sequence of pictures explain how an animation/flip book works create an effective stop-frame animation explain why little changes are needed for each frame predict what an animation will look like break down a story into settings, characters and events create a storyboard describe an animation that is achievable on screen evaluate the quality of my animation review a sequence of frames to check my work use onion skinning to help me make small changes between frames evaluate another learner's animation explain ways to make my animation better improve my animation based on feedback add other media to my animation evaluate my final film explain why I added other media to my animation <p>DESKTOP PUBLISHING</p> <ul style="list-style-type: none"> explain the difference between text and images identify the advantages and disadvantages of using text and images recognise that text and images can communicate messages clearly change font style, size, and colours for a given purpose edit text explain that text can be changed to communicate more clearly create a template for a particular purpose define the term 'page orientation recognise placeholders and say why they are important choose the best locations for my content make changes to content after I've added it paste text and images to create a magazine cover choose a suitable layout for a given purpose identify different layouts match a layout to a purpose compare work made on desktop publishing to work created by hand identify the uses of desktop publishing in the real world say why desktop publishing might be helpful 	<p>YEAR 5</p> <p>VIDEO EDITING</p> <ul style="list-style-type: none"> compare features in different videos explain that video is a visual media format identify features of videos experiment with different camera angles identify and find features on a digital video recording device make use of a microphone" capture video using a range of filming techniques review how effective my video is suggest filming techniques for a given purpose create and save video content decide which filming techniques I will use outline the scenes of my video explain how to improve a video by reshooting and editing select the correct tools to make edits to my video store, retrieve, and export my recording to a computer evaluate my video and share my opinions make edits to my video and improve the final outcome recognise that my choices when making a video will impact on the quality of the final outcome <p>VECTOR DRAWING</p> <ul style="list-style-type: none"> discuss how a vector drawing is different from paper-based drawings identify the main drawing tools recognise that vector drawings are made using shapes explain that each element added to a vector drawing is an object identify the shapes used to make a vector drawing move, resize, and rotate objects I have duplicated explain how alignment grids and resize handles can be used to improve consistency modify objects to create different effects use the zoom tool to help me add detail to my drawings change the order of layers in a vector drawing identify that each added object creates a new layer in the drawing identify which objects are in the front layer or in the back layer of a drawing copy part of a drawing by duplicating several objects group to create a single object reuse a group of objects to further develop my vector drawing apply what I have learned about vector drawings suggest improvements to a vector drawing create alternatives to vector drawings

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	KS1	LKS2	UKS2
Creating Media	<p>YEAR 2</p> <p>DIGITAL PHOTOGRAPHY</p> <ul style="list-style-type: none"> explain what I did to capture a digital photo recognise what devices can be used to take photographs talk about how to take a photograph explain the process of taking a good photograph explain why a photo looks better in portrait or landscape format take photos in both landscape and portrait format discuss how to take a good photograph identify what is wrong with a photograph improve a photograph by retaking it experiment with different light sources explain why a picture may be unclear explore the effect that light has on a photo explain my choices recognise that images can be changed use a tool to achieve a desired effect apply a range of photography skills to capture a photo identify which photos are real and which have been changed recognise which photos have been changed <p>DIGITAL MUSIC</p> <ul style="list-style-type: none"> describe music using adjectives identify simple differences in pieces of music say what I do and don't like about a piece of music create a rhythm pattern explain that music is created and played by humans play an instrument following a rhythm pattern" connect images with sounds relate an idea to a piece of music use a computer to experiment with pitch explain how my music can be played in different ways identify that music is a sequence of notes refine my musical pattern on a computer add a sequence of notes to my rhythm create a rhythm which represents an animal I've chosen create my animal's rhythm on a computer explain how I changed my work listen to music and describe how it makes me feel review my work 	<p>YEAR 4</p> <p>AUDIO EDITING</p> <ul style="list-style-type: none"> identify digital devices that can record sound and play it back identify the inputs and outputs required to play audio or record sound recognise the range of sounds that can be recorded discuss what other people include when recording sound for a podcast suggest how to improve my recording use a device to record audio and play back sound discuss why it is useful to be able to save digital recordings plan and write the content for a podcast save a digital recording as a file discuss ways in which audio recordings can be altered edit sections of an audio recording open a digital recording from a file choose suitable sounds to include in a podcast discuss sounds that other people combine use editing tools to arrange sections of audio discuss the features of a digital recording I like explain that digital recordings need to be exported to share them suggest improvements to a digital recording <p>PHOTO EDITING</p> <ul style="list-style-type: none"> explain the effect that editing can have on an image explore how images can be changed in real life identify changes that we can make to an image change the composition of an image by selecting parts of it consider why someone might want to change the composition of an image explain what has changed in an edited image choose effects to make my image fit a scenario explain why my choices fit a scenario talk about changes made to images choose appropriate tools to retouch an image give examples of positive and negative effects that retouching can have on an image identify how an image has been retouched combine parts of images to create new images sort images into 'fake' or 'real' and explain my choices talk about fake images around me compare the original image with my completed publication consider the effect of adding other elements to my work evaluate the impact of my publication on others through feedback 	<p>YEAR 6</p> <p>WEB PAGE CREATION</p> <ul style="list-style-type: none"> discuss the different types of media used on websites explore a website know that websites are written in HTML draw a web page layout that suits my purpose recognise the common features of a web page suggest media to include on my page describe what is meant by the term 'fair use' find copyright-free images say why I should use copyright-free images add content to my own web page evaluate what my web page looks like on different devices and suggest/make edits preview what my web page looks like describe why navigation paths are useful explain what a navigation path is make multiple web pages and link them using hyperlinks create hyperlinks to link to other people's work evaluate the user experience of a website explain the implication of linking to content owned by others <p>3D MODELLING</p> <ul style="list-style-type: none"> discuss the similarities and differences between 2D and 3D shapes explain why we might represent 3D objects on a computer select, move, and delete a digital 3D shape change the colour of a 3D object identify how graphical objects can be modified resize a 3D object position 3D objects in relation to each other rotate a 3D object select and duplicate multiple 3D objects create digital 3D objects of an appropriate size group a digital 3D shape and a placeholder to create a hole in an object identify the 3D shapes needed to create a model of a real-world object choose which 3D objects I need to construct my model modify multiple 3D objects plan my 3D model decide how my model can be improved evaluate my model against a given criterion modify my model to improve it

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	KS1	LKS2	UKS2
Programming	<p>YEAR 1</p> <p>MOVING A ROBOT</p> <ul style="list-style-type: none"> match a command to an outcome predict the outcome of a command on a device run a command on a device follow an instruction give directions recall words that can be acted out compare forwards and backwards movements predict the outcome of a sequence involving forwards and backwards commands start a sequence from the same place compare left and right turns experiment with turn and move commands to move a robot predict the outcome of a sequence involving up to four Commands choose the order of commands in a sequence debug my program explain what my program should do identify several possible solutions plan two programs use two different programs to get to the same place <p>PROGRAMMING ANIMATIONS</p> <ul style="list-style-type: none"> compare different programming tools find which commands to move a sprite use commands to move a sprite run my program use a Start block in a program use more than one block by joining them together change the value find blocks that have numbers say what happens when I change a value add blocks to each of my sprites delete a sprite show that a project can include more than one sprite choose appropriate artwork for my project create an algorithm for each sprite decide how each sprite will move add programming blocks based on my algorithm test the programs I have created use sprites that match my design 	<p>YEAR 3</p> <p>SEQUENCE IN MUSIC</p> <ul style="list-style-type: none"> explain that objects in Scratch have attributes (linked to) identify the objects in a Scratch project (sprites, backdrops) recognise that commands in Scratch are represented as blocks choose a word which describes an on-screen action for my plan create a program following a design identify that each sprite is controlled by the commands I choose create a sequence of connected commands explain that the objects in my project will respond exactly to the code start a program in different ways combine sound commands explain what a sequence is order notes into a sequence build a sequence of commands decide the actions for each sprite in a program make design choices for my artwork identify and name the objects I will need for a project implement my algorithm as code relate a task description to a design <p>EVENTS & ACTIONS</p> <ul style="list-style-type: none"> choose which keys to use for actions and explain my choices explain the relationship between an event and an action identify a way to improve a program choose a character for my project choose a suitable size for a character in a maze program movement choose blocks to set up my program consider the real world when making design choices use a programming extension build more sequences of commands to make my design work choose suitable keys to turn on additional features identify additional features (from a given set of blocks) match a piece of code to an outcome modify a program using a design test a program against a given design evaluate my project implement my design make design choices and justify them 	<p>YEAR 5</p> <p>SELECTION IN PHYSICAL COMPUTING</p> <ul style="list-style-type: none"> create a simple circuit and connect it to a microcontroller explain what an infinite loop does program a microcontroller to make an LED switch on connect more than one output component to a microcontroller design sequences that use count-controlled loops use a count-controlled loop to control outputs design a conditional loop explain that a condition is either true or false program a microcontroller to respond to an input explain that a condition being met can start an action identify a condition and an action in my project use selection (an 'if...then...' statement) to direct the flow of a program create a detailed drawing of my project describe what my project will do identify a real-world example of a condition starting an action test and debug my project use selection to produce an intended outcome write an algorithm that describes what my model will do <p>SELECTION IN QUIZZES</p> <ul style="list-style-type: none"> identify conditions in a program modify a condition in a program recall how conditions are used in selection create a program with different outcomes using selection identify the condition and outcomes in an 'if... then... else...' statement use selection in an infinite loop to check a condition design the flow of a program which contains 'if... then... else...' explain that program flow can branch according to a condition show that a condition can direct program flow in one of two ways identify the outcome of user input in an algorithm outline a given task use a design format to outline my project implement my algorithm to create the first section of my program share my program with others test my program extend my program further identify the setup code I need in my program identify ways the program could be improved

How do we plan for progression of knowledge and skills within Computing at Broadhurst?

	KS1	LKS2	UKS2
Programming	<p>YEAR 2</p> <p>ROBOT ALGORITHMS</p> <ul style="list-style-type: none"> choose a series of words that can be enacted as a sequence follow instructions given by someone else give clear instructions show the difference in outcomes between two sequences that consist of the same commands use an algorithm to program a sequence on a floor robot use the same instructions to create different algorithms compare my prediction to the program outcome follow a sequence predict the outcome of a sequence explain the choices I made for my mat design identify different routes around my mat test my mat to make sure that it is usable create an algorithm to meet my goal explain what my algorithm should achieve use my algorithm to create a program plan algorithms for different parts of a task put together the different parts of my program test and debug each part of the program <p>PROGRAMMING QUIZZES</p> <ul style="list-style-type: none"> identify that a program needs to be started identify the start of a sequence show how to run my program change the outcome of a sequence of commands match two sequences with the same outcome predict the outcome of a sequence of commands build the sequences of blocks I need decide which blocks to use to meet the design work out the actions of a sprite in an algorithm choose backgrounds for the design choose characters for the design create a program based on the new design build sequences of blocks to match my design choose the images for my own design create an algorithm compare my project to my design debug my program improve my project by adding features 	<p>YEAR 4</p> <p>REPETITION IN SHAPES</p> <ul style="list-style-type: none"> create a code snippet for a given purpose explain the effect of changing a value of a command program a computer by typing commands test my algorithm in a text-based language use a template to create a design for my program write an algorithm to produce a given outcome identify everyday tasks that include repetition as part of a sequence, e.g brushing teeth, dance moves identify patterns in a sequence use a count-controlled loop to produce a given outcome choose which values to change in a loop identify the effect of changing the number of times a task is repeated predict the outcome of a program containing a count-controlled loop explain that a computer can repeatedly call a procedure identify 'chunks' of actions in the real world use a procedure in a program design a program that includes count-controlled loops develop my program by debugging it make use of my design to write a program <p>REPETITION IN GAMES</p> <ul style="list-style-type: none"> list an everyday task as a set of instructions including repetition modify a snippet of code to create a given outcome predict the outcome of a snippet of code choose when to use a count-controlled and an infinite loop modify loops to produce a given outcome recognise that some programming languages enable more than one process to be run at once choose which action will be repeated for each object evaluate the effectiveness of the repeated sequences used in my program explain what the outcome of the repeated action should be explain the effect of my changes identify which parts of a loop can be changed re-use existing code snippets on new sprites develop my own design explaining what my project will do evaluate the use of repetition in a project select key parts of a given project to use in my own design" build a program that follows my design evaluate the steps I followed when building my project refine the algorithm in my design 	<p>YEAR 6</p> <p>VARIABLES IN GAMES</p> <ul style="list-style-type: none"> explain that the way that a variable changes can be defined identify examples of information that is variable identify that variables can hold numbers or letters explain that a variable has a name and a value identify a program variable as a placeholder in memory for a single value recognise that the value of a variable can be changed decide where in a program to change a variable make use of an event in a program to set a variable recognise that the value of a variable can be used by a program choose the artwork for my project create algorithms for my project explain my design choices choose a name that identifies the role of a variable create the artwork for my project test the code that I have written extend my game further using more variables identify ways that my game could be improved share my game with others <p>SENSING</p> <ul style="list-style-type: none"> apply my knowledge of programming to a new environment test my program on an emulator transfer my program to a controllable device determine the flow of a program using selection identify examples of conditions in the real world use a variable in an if, then, else statement to select the flow of a program experiment with different physical inputs explain that if you read a variable, the value remains use a condition to change a variable explain the importance of the order of conditions in else, if statements modify a program to achieve a different outcome use an operand (e.g. <=>) in an if, then statement decide what variables to include in a project design the algorithm for my project design the program flow for my project create a program based on my design test my program against my design use a range of approaches to find and fix bugs

How do we plan for progression of knowledge and skills within Computing at Broadhurst?

	KS1	LKS2	UKS2
Data and Information	<p>YEAR 1</p> <ul style="list-style-type: none"> describe objects using labels identify the label for a group of objects match objects to group count a group of objects count objects group objects describe an object describe a property of an object find objects with similar properties count how many objects share a property group objects in more than one way group similar objects choose how to group objects describe groups of objects record how many objects are in a group compare groups of objects decide how to group objects to answer a question record and share what I have found <p>YEAR 2</p> <ul style="list-style-type: none"> compare totals in a tally chart record data in a tally chart represent a tally count as a total enter data onto a computer use a computer to view data in a different format use pictograms to answer simple questions about objects explain what the pictogram shows organise data in a tally chart use a tally chart to create a pictogram answer 'more than'/'less than' and 'most/least' questions about an attribute create a pictogram to arrange objects by an attribute tally objects using a common attribute choose a suitable attribute to compare people collect the data I need create a pictogram and draw conclusions from it give simple examples of why information should not be shared share what I have found out using a computer use a computer program to present information in different ways 	<p>YEAR 3</p> <ul style="list-style-type: none"> create two groups of objects separated by one attribute Investigate questions with yes/no answers make up a yes/no question about a collection of objects arrange objects into a tree structure create a group of objects within an existing group select an attribute to separate objects into groups group objects using my own yes/no questions prove my branching database works select objects to arrange in a branching database compare two branching database structures create yes/no questions using given attributes explain that questions need to be ordered carefully to split objects into similarly sized groups create questions and apply them to a tree structure select a theme and choose a variety of objects use my branching database to answer questions compare two ways of presenting information explain what a branching database tells me explain what a pictogram tells me <p>YEAR 4</p> <ul style="list-style-type: none"> choose a data set to answer a given question identify data that can be gathered over time suggest questions that can be answered using a given data set explain that sensors are input devices identify that data from sensors can be recorded use data from a sensor to answer a given question identify a suitable place to collect data identify the intervals used to collect data talk about the data that I have captured import a data set use a computer program to sort data use a computer to view data in different ways plan how to collect data using a data logger propose a question that can be answered using logged data use a data logger to collect data draw conclusions from the data that I have collected explain the benefits of using a data logger interpret data that has been collected using a data logger 	<p>YEAR 5</p> <ul style="list-style-type: none"> create multiple questions about the same field explain how information can be recorded order, sort, and group my data cards choose which field to sort data by to answer a given question explain what a 'field' and a 'record' is in a database navigate a flat-file database to compare different views of information"combine grouping and sorting to answer more specific questions explain how information can be grouped group information to answer questions choose multiple criteria to answer a given question choose which field and value are required to answer a given question outline how 'AND' and 'OR' can be used to refine data selection explain the benefits of using a computer to create graphs refine a chart by selecting a particular filter select an appropriate chart to visually compare data ask questions that will need more than one field to answer present my findings to a group refine a search in a real-world context <p>YEAR 6</p> <ul style="list-style-type: none"> answer questions from an existing data set ask simple relevant questions which can be answered using data explain the relevance of data headings apply an appropriate number format to a cell build a data set in a spreadsheet application explain what an item of data is construct a formula in a spreadsheet explain the relevance of a cell's data type identify that changing inputs changes outputs apply a formula to multiple cells by duplicating it create a formula which includes a range of cells recognise that data can be calculated using different operations apply a formula to calculate the data I need to answer questions explain why data should be organised use a spreadsheet to answer questions produce a graph suggest when to use a table or graph use a graph to show the answer to questions

Long term Plan Key Stage 1 & Key Stage 2

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Computer systems and networks Technology around us	Creating Media Digital painting	Programming Moving a robot	Data and Information Grouping Data	Creating Media Digital writing	Programming Introduction to animation
Year 2	Computer systems and networks IT around us	Creating Media Digital photography	Programming Robot Algorithms	Data and Information Pictograms	Creating Media Making music	Programming An introduction to quizzes
Year 3	Computer systems and networks Connecting computers	Creating Media Animation	Programming Sequence in music	Data and Information Branching Databases	Creating Media Desktop publishing	Programming Events and actions
Year 4	Computer systems and networks The internet	Creating Media Audio Editing	Programming Repetition in shapes	Data and Information Data Logging	Creating Media Photo Editing	Programming Repetition in games
Year 5	Computer systems and networks Sharing information	Creating Media Vector Drawing	Programming Selection in physical computing	Data and Information Flat-file databases	Creating Media Video Editing	Programming Selection in quizzes
Year 6	Computer systems and networks Communication	Creating Media 3D Modelling	Programming Variables in games	Data and Information Spreadsheets	Creating Media Web page creation	Programming Sensing

How do we know that the children have made progress in ICT and Computing?

At the end of KS1 Children can:

- Understand what algorithms are; how they are implemented as programs on digital devices; and 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
- 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.

How do we know that the children have made progress in ICT and Computing?

At the end of KS2 children can:

- 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
- 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
- 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
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

How do we know that the children have made progress in ICT and Computing?

Assessments

AFL- Every lesson includes formative assessment opportunities for teachers to use. They vary from teacher observation or questioning, to marked activities. The learning objective and success criteria are introduced in the slides at the beginning of every lesson. At the end of every lesson, pupils are invited to assess how well they feel they have met the learning objective by completing their tickable targets.

The work that pupils complete is stored on Google classroom and can be marked after the session as well as feedback provided. Evidence for achievement/ attainment may also include

- Notes on conversations or discussions that you have or hear during an activity
- The pupils' self-assessments at the end of the lesson (Tickable Targets)

Summative

At the end of each unit of work, children will complete a short assessment (teach computing) that are used by class teachers to give an assessment judgement. At the end of each unit of work a summative judgement will be made and recorded on the class assessment sheet on the drive. At the end of the year an overall judgement will be made and entered into O Track as - At, Working Towards or Greater Depth.

How do we know that ICT and Computing is successful?

The pupils will know more and remember more.

Assessment Analysis

The subject leader will analyse data. This will be used in conjunction with lesson observations, pupil voice and work scrutiny (Google Classroom) to make an overall judgement on the impact of Computing at Co-op Academy Broadhurst.

Pupil Voice

Groups of children will take part in pupil interviews each term. Judgements will be made on the success of teaching and learning in Computing depending on how they are able to talk about their learning, how it links to previous learning and how they can evaluate their attainment in Computing. They will also have the opportunity to ask questions and answer questions on how the curriculum can be improved further.

Technology and Careers Ambassadors

The Technology and Careers Ambassadors will work alongside the Computing Lead and support with pupil voice interviews, questionnaires, monitoring and work scrutiny in Computing.

(Article 12: Every child has the right to have a say in all matters affecting them, and to have their views taken seriously)