

## Computing Progression of Skills, Knowledge and Vocabulary Map 2023-2024

Understanding the World	Foundation Stage							
	opportunities to develop sl	kills that children will go on t chnology both digitally and i Technologies should be see	th digital and non-digital in the to develop in their lifetimes. In n the natural world. Through te n as tools to learn both from a	vestigations, scientific inquechnology children have ac	uiry and exploration are esse Iditional opportunities to lear	ential components of rn across all areas in both		
Technology	Foundation Stage 1 Foundation Stage 2 Cause and Effect, Structures Cause and Effect, Structures							
	Explore how things work.	ause and Eneci, Structur						
	· ·	n turning on and operating son		Show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.				
	Operate mechanical toys.			Know that information can be	e retrieved from digital devices	and the internet.		
	_ ·	equipment, for example, uses	a remote control, can	Complete a simple program	on electronic devices.			
	navigate touch-capable techi			Use ICT hardware to interact	t with age appropriate compute	r software.		
	Shows an interest in technolocameras, and touchscreen do	ogical toys with knobs or pulley evices such as mobile phones	ys, real objects such as and tablets.	Create content such as a video recording of a musical performance, stories, and/or draw a picture on a screen.				
				Develop digital literacy skills by being able to access, understand and interact with a range of technologies.				
				Use the internet with adult supervision to find and retrieve information of interest to them.  Know some ways to keep safe when using the internet, for example Tell: If anything happens that makes you feel worried or uncomfortable when using the Internet, you need to tell someone; Know which trusted adults to talk to - parents, carers, teachers, etc.				
Key Vocabulary	On, off, button, program, for	vards, backwards, turn, predic	t, record, play, edit, save, interne	t, website, safe, mute, volum	e.			
Year Group Connected	Key S Cause and Eff	tage 1 ect, Structures		Key Stage 2 Upper Key Stage 2  ffect, Structures Cause and Effect, Structures				
Concepts	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
Computing systems and networks – IT around	To identify a computer and its main parts.  To use a mouse in different ways.	Recognise the uses and features of IT.  Identify the uses of IT in school and beyond school.	Explain how digital devices function.  Identify input and output devices.	Describe how networks connect to other networks.  Recognise how	Explain that computers can be connected together to form systems.  Recognise the role of	Identify how to use a search engine.  Describe how search engines select results.		
us/sharing information	To use a keyboard to type on a computer.	Explain how IT helps us.  Recognise choices are	Explain how a computer network can be used to share	networked devices make up the internet.	computer systems in our lives.	Explain how results are ranked.		
	To use the keyboard to edit text.  To create rules for using	information.  Explore how digital devices can be connected.	Know how websites can be shared via the WWW.  Recognise how the	Recognise how information is transferred over the internet.	Recognise why the order of results is important and to whom.			
	technology responsibly.		Recognise the physical components of a network.	content on the www is created by people.	Explain how sharing information allows people to work together online regardless of location.	Recognise how we communicate with technology.		



Key Vocabulary	Computer, screen, keyboard, mouse, hard drive, website, input, output, cursor, command, device, information, sequence, algorithm, file, folder, font.	Computational thinking, debugging, data, code, sequence, internet, save, retrieve, program.	Copy, paste, sprites, hyperlink, hardware, network, digital devices, desktop publishing, HTML (hypertext mark-up language), web browser, server, software, Wi-Fi, WAP (wireless access point) evaluate, programming, stop frame, branching database, database.	Evaluate the consequences of unreliable content.  Router, repeat, repetition, decompose, infinite loop, data set, networked devices, www, browser, data logger, sensors, count controlled loop, podcast.	Contribute to a shared project online.  Form, record, computer systems, selection, software, vector drawings, condition, condition controlled loop, domain name, URL.	Evaluate different methods of communication.  Composition, ranked, web crawlers, search engine index, spreadsheet, formula, variables, procedure, 3d models, values.
Assessment and indicators	Name the main parts of a computer.  Switch on and logon to a computer on the school network.  Use a mouse to click and drag to make objects on a screen.  Use a mouse to open programs.  Know what a keyboard is for and use it to type words on screen.  Use the delete key to edit text and the arrow keys to move the cursor.  Open my work from a file. Identify rules to keep us safe and healthy when we are using technology	Describe some uses of computers.  Identify examples of computers and that they are a part of IT.  Talk about uses of IT.  Say why we use IT.  Talk about different rules for using IT and how these keep me safe.  Use IT for different types of activities.	Explain that digital devices accept inputs and produce outputs.  Classify input and output devices.  Explain how messages are passed through multiple connections.  Explain the role of a network switch, server and wireless access point in a network.  Recognise that a computer network is made up of multiple devices.	Demonstrate how information is shared across the internet.  Describe networked devices and how they connect.  Describe how to access websites on the www and describe where they are stored when uploaded to the www.  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 content on websites.  Explain that not everything on the www is true, accurate or legal.  Explain why caution is needed before sharing on the www.	Explain that computer systems involve inputs, processes and outputs and that they communicate with other devices. Identify tasks managed by computer systems and identify the human elements within the system. Explain that data is transferred in packets and that networked devices have unique addresses. Know that networked devices allow access to shared files (different media) stored online. Send information over the internet in different ways. Compare working online and offline. Explain how the internet enables effective collaboration.	Compare results from different search engines when looking for specific information.  Refine my search.  Recognise the role of web crawlers in creating an index.  Relate search terms to the search engine's index.  Explain that rules are followed to rank pages.  Results are ordered according to different criteria.  Describe some of the ways search results can be influenced.  Know how search engines make money and their limitations.  Identify various ways to communicate and know which are best for a certain purpose.  Decide when to share/not share online.  Explain that communication on the internet may not be private.



Year Group Connected		Stage 1 fect, Structures	Lower Key Cause and Effec			ey Stage 2 ect, Structures
Concepts	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Creating media	To use shape tools and line tools in an art package.  To make careful choices when painting a digital picture.  To explain why I chose the tools I used.  To use a computer on my own to paint a picture.  To compare painting a picture on a computer and on.	Use a digital device to take a photograph.  Explain what makes a good photograph and make choices when taking photos.  Decide how photos can be improved.  Recognise that photos can be changed and use tools to do so.  Show how music is made from a series of notes.  Create music for a purpose.	Know that animation is a sequence of drawings or photographs.  Relate animated movement with a sequence of images.  Plan an animation.  Identify the need to work consistently and carefully Review and improve an animation.	Explain that digital images can be changed. Change the composition of an image. Describe how images can be changed for different uses. Make good choices when selecting tools. Recognise that not all images are real. Evaluate how changes can improve an image.	Identify what makes an effective video. Capture video using a range of techniques. Create a storyboard. Identify where a video can be improved through reshooting and editing. Consider the impact of the choices made when making and sharing a video. (imovie)	Use a computer to create and manipulate 3d digital objects.  Construct a 3d model of a physical object.  Identify that physical objects can be broken down into a collection of 3d shapes.  Design a digital model.  Develop and improve a 3d model. (tinkercad.com)
Key Vocabulary	Computer, screen, keyboard, mouse, hard drive, website, input, output, cursor, command, device, information, sequence, algorithm, file, folder, font.	Computational thinking, debugging, data, code, sequence, internet, save, retrieve, program.	Copy, paste, sprites, hyperlink, hardware, network, digital devices, desktop publishing, HTML (hypertext mark-up language), web browser, server, software, Wi-Fi, WAP (wireless access point) evaluate, programming, stop frame, branching database, database.	Router, repeat, repetition, decompose, infinite loop, data set, networked devices, www, browser, data logger, sensors, count controlled loop, podcast.	Form, record, computer systems, selection, software, vector drawings, condition, condition controlled loop, domain name, URL.	Composition, ranked, web crawlers, search engine index, spreadsheet, formula, variables, procedure, 3d models, values.
Assessment and indicators	Draw lines and make marks on a screen and explain which tools were used.  Use a range of tools to draw a picture.  Use the shape and line tools effectively to recreate the work of an artist.  Make choices about colour and shapes to create work in the style of an artist.  Control the brush size and colour to make dots on a page to create a picture in the style of an artist.	Can explain how to take a photograph.  Take photographs in portrait and landscape mode and explain which format looks better.  Identify what is wrong with a photo and how to improve it by retaking the shot.  Explore the effect light has on a photograph by experimenting with light sources.  Use tools to achieve a desired effect when editing a photo	Create an effective flip book using a sequence of pictures.  Explain why little changes are needed for each frame Create a storyboard. Create an effective stop frame animation. Review a sequence of frames to review my work Explain ways to make an animation better. Improve an animation based on feedback.	Explore how images can be changed in real life. Identify changes we can make to an image. Change the composition of an image by selecting part of it. Consider why someone would want to change the composition. Choose appropriate tools to retouch an image. Identify how an image has been retouched both positively and negatively.	Compare features in different videos.  Experiment with camera angles.  Make use of a microphone.  Suggest filming techniques for a given purpose.  Decide on filming techniques to be used and create and save video content.  Review how effective my video is and decide where editing is necessary.  Store, retrieve and export my recording to a computer	Select, move and delete a digital 3d shape.  Position 3d objects in relation to each other and rotate them.  Select and duplicate 3d objects.  Identify the 3d shapes needed to create a model.  Decide which 3d objects are needed to construct a model.  Evaluate my model and decide how it can be improved



	Explain which tools were used to create artwork.  Express preferences for creating art digitally or on paper.	Identify which photographs are real and which have been changed. Use a computer to create a musical pattern using three notes Save my work and reopen it.		Sort images into fake and real and talk about fake images around me. Compare the original image with my completed publication.	Recognise that choices made when making a video will impact the quality of the final outcome.	
Year Group	Key S	tage 1	Lower Key	Stage 2	Upper Ke	y Stage 2
Connected		ect, Structures	Cause and Effe			ect, Structures
Concepts	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Data and information	Label and count objects  Describe objects in different ways.  Count objects with the same properties.  Compare groups of objects  Answer questions about a group of objects.	Recognise that we can count and compare objects using tally charts.  Recognise that objects can be represented as pictures.  Create a pictogram.  Recognise that people can be described by attributes.  Explain that we can present information using a computer.  (J2epictogram – online)	Create questions with yes/no answers.  Identify the object attributes needed to collect relevant data.  Create a branching database.  Explain why it is helpful for a database to be well structured.  Identify objects using a branching database  Compare the information shown in a pictogram with a branching database.  (J2e.com – branch)	Explain that data gathered over time can be used to answer questions.  Use a digital device to collect data automatically.  Explain that a data logger collects 'data points' from sensors over time.  Identify the data needed to answer questions.  Use collected data to answer questions.	Use a form to record information.  Compare paper and computer based databases.  Explain how grouping and then sorting data allows it to be used to answer questions.  Explain that specific data can be selected.  Explain that computer programs can be used to compare data visually.  Apply knowledge of a database to ask and answer real-world questions (j2e com)	Identify questions which can be answered using data.  Explain that objects can be described using data.  Explain that formulas can be used to produce calculated data.  Apply formulas to data including duplicating.  Create a spreadsheet to plan an event  Choose suitable ways to present data. (excel)
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Assessment and indicators	Identify labels for a group of objects and match objects to groups.  Count a group of objects.	Record data in a tally chart and compare totals in the chart.  Enter data into a computer.	about a collection of objects.  Select an attribute to separate objects into	Suggest questions that can be answered using a given data set.  Use data from sensors (input devices) to answer a given question.	Explain how information can be recorded. Order, sort and group data.	Answer questions from existing data sets.  Explain what an item of data is.

	Describe the properties of an object.  Group similar objects in more than one way.  Compare groups of objects  Decide how to group objects to answer a question.	Use a computer to view data in a different format. Create a pictogram and use it to answer simple questions. Choose suitable attributes to compare people to be able to collect data. Draw conclusions from data collected. Share conclusions with a computer in different ways.	Group objects using yes/no questions.  Prove a branching database works.  Explain what a branching database tells me vs what a pictogram tells me.	Identify a suitable place to collect data and talk about the data you have captured.  Import a data set into software and use it to sort the data.  Plan how to collect data using a data logger and propose a question that could be answered.  Draw conclusions from the data collected and explain the benefits of using a data logger	Choose which field to sort by to answer a given question.  Explain what field and record mean.  Group information to answer questions  Combine grouping and sorting to answer specific questions.  Choose which field and value are required to answer a question  Use 'AND' and 'OR' to refine selection  Explain the benefits of using a computer to create graphs.  Ask questions that will need more than one field to answer.	Build a data set in a spreadsheet. Construct a formula. Identify that changing inputs changes outputs Apply a formula to multiple cells by duplicating it. Create a formula which involves a range of cells. Apply a formula to calculate data to answer questions. Use a spreadsheet to answer questions Use a graph to how answers to questions.
Year Group		tage 1		y Stage 2		y Stage 2
Connected Concepts	Cause and Eff Year 1	ect, Structures	Cause and Effe Year 3	ect, Structures	Cause and Effe	ect, Structures Year 6
Programming	Bluebots	Year 2 Espresso	Scratch	Year 4 Scratch	Scratch	Scratch
Programming	Explain what a given command will do.  Act out a given word.  Combine direction commands to create a sequence. (robot)  To plan a simple program. (algorithm)	Describe a series of instructions as a sequence.  Explain what happens when we change the order of instructions.  Use logical reasoning to predict the outcome of a program.  Explain that programming	Explore a new programming environment. Identify that commands have an outcome. Explain that a program has a start. Recognise that a sequence of commands have an order.	Identify that accuracy in programming is important. Create a program. Explain what 'repeat' means. Modify a count controlled loop to produce a given outcome. Decompose a task into	Control a simple circuit. connected to a computer Write a program with count controlled loops. Explain that a loop can stop when a condition is met. Explain that a loop can be used to continuously check	Define a variable as something that is changeable.  Explain why variables are used in programs.  Choose how to improve a game using variables.  Design a project that builds on a given example.



	Use algorithms to create a program.	Create a program using a given design. Change a given design. Create a program using my own design. Decide how my project can be improved.	Adapt a program to a new context.  Identify and fix bugs.  Design and create a maze based challenge.	Explore the use of infinite loops as well as count controlled loops.  Modify an infinite loop in a given program.  Design a project that includes repetition with multiple loops running at the same time.	Design a program which uses selection.  Create a program with selection and evaluate it.	Update a variable with a user input. Use a conditional statement to compare a variable to a value. Design and develop a program that uses inputs and outputs on a controllable device.
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Assessment and indicators	Predict the outcome of a command on a device Run a command on a device. Give and follow instructions Experiment with turn and move commands to move a robot. Choose the order of commands in a sequence. Explain what a program should do and debug it if it doesn't. Identify different solutions and plan more than one program to get to the same place. Use a start block and combine multiple blocks in a program. Add blocks to sprites. Delete sprites. Create algorithms for each sprite to move as intended.	Follow instructions given by someone else and give clear unambiguous instructions.  Create different algorithms for a range of sequences.  Show the difference in outcomes between two sequences.  Program an algorithm on a floor robot.  Predict the outcome of a sequence and compare my prediction to the program outcome.  Explain the choices made for a design.  Use algorithms to create a program to meet a goal.  Explain what an algorithm should achieve.  Test and debug each part of the program.	Identify objects in a scratch project. (sprites, backdrops)  Know that each sprite is controlled by the blocks I use.  Create a series of connected commands.  Start a program in different ways.  Combine sound commands into a sequence.  Decide the actions for each sprite in a program.  Make design choices in a project.  Implement my algorithm as code.  Choose which keys to use for actions.  Program movement.  Choose blocks to set up my program.	Explain the effect of changing a value of a command.  Use a template to create a design for my program.  Identify everyday tasks that include repetition as a sequence.  Identify patterns in a sequence.  Use a count controlled loop to produce a given outcome.  Choose which values to change in a loop.  Predict the outcome of a program containing a count controlled loop.  Design a program using count controlled loops.  Debug a program.  Choose when to use infinite loops and count controlled loops.	Program a micro controller to control LEDs.  Design sequences that use count controlled loops to control outputs.  Design a conditional loop  Program a microcontroller to respond to an input.  Explain that a condition being met can start/end an action.  Identify a condition and action in a project.  Use selection to direct the flow of a program.  Explain what my project will do.  Use selection to produce an intended outcome.  Identify and modify a condition in a program.  Use a design format to outline a given task for a project.	Explain that variables can hold numbers of letters.  Explain that variables have names and values.  Identify variables as placeholders in memory for a single value.  Recognise that the value of a variable can be changed.  Make use of an event in a program to set a variable.  Decide where in a program to change a variable.  Create algorithms for a project.  Test, evaluate and extend a project further with more variables.  Apply my programming knowledge to a new environment.  Transfer a program to a controllable device.



	Choose a suitable design for the project. (artwork/backdrop) Test a program I have created.	Show how to run a program.  Decide which blocks to use to meet a given design Choose backgrounds, characters and blocks for my design.  Compare my project to my design and improve it by adding features	an outcome.  Test a program against a given goal.  Evaluate my project.	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. Select key parts of a given project to use in my own design.	Implement an algorithm to create a program.  Test a program.  Extend the program further and identify how it could be improved.	Determine the flow of a program using selection. (if, then, else) Use a condition to change a variable. Use an operator in an if, then statement. Decide what variables to include. Create and test a program based on a design.
Year Group Connected	Key S Cause and Effe		Lower Key Cause and Effe			ey Stage 2 ect, Structures
Concepts	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Digital literacy	Use a computer to write.	Music element of creating	Recognise how text and	Identify that sound can	Use tools to achieve a	Explain that digital images
_ :3	Add and remove text on a	media.	images convey information.	be digitally recorded.	desired effect.	can be changed.
	computer.  Know that the look of text		Recognise that text and layout can be edited.	Use a digital device to record sound.	Recognise vector drawings consist of layers.	Change the composition of an image.
	can be changed on a computer.		Choose appropriate page settings.	Explain that a digital recording is stored as a	Group objects to make them easier to work with.	Describe how images can be changed for different
	Make careful choices when changing text.		Add content to a desktop publishing publication.	file and can be changed through editing.	Evaluate my vector drawings. (Google	uses.  Make good choices when
	Explain why tools were selected.		Consider how different layouts can suit different	Show that different types of audio can be	drawings)	selecting tools.  Recognise that not all
	Compare typing on a		purposes.	combined and played together.		images are real.
	computer to writing on paper.		Consider the benefits of desktop publishing.	Evaluate editing choices media.		Evaluate how changes can improve an image.
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Assessment and indicators	Recognise and find keys on a keyboard.	Change font style, size, and colours for a given purpose.	Identify the inputs and outputs required to play	Modify objects to create different effects.	Explore how images can be changed in real life.
	Use letters, numbers and the space key to enter text	Know that text can be changed to communicate	audio or record sound.  Discuss what other	Use zoom to help add detail to drawings.	Identify changes we can make to an image.
	into a computer.  Explain what different keys do.  Identify the toolbar and use bold, italics and underline.	more clearly.  Understand the term page orientation and can choose a suitable layout for a purpose paste text and images.	people include when recording a podcast.  Use a device to record audio and playback sound and save a digital recording as a file.	Change the order of layers in a vector drawing.  Identify each added object makes a layer.  Identify front and back	Change the composition of an image by selecting part of it.  Consider why someone would want to change the
	Type capital letters. Change fonts.	Choose the best location for content and make changes after it has been added.	Plan and write the content for a podcast.	layers in a drawing. Group to create a single	composition. Choose appropriate tools to retouch an image.
	Select a word by double clicking.	Compare work made on desktop publishing and by	Discuss how a recording can be altered.	object. Suggest improvements to a vector drawing.	Identify how an image has been retouched both
	Select all of the text by clicking and dragging with the mouse.	hand and explain why desktop publishing might be useful.	Open a digital recording from a file and edit sections.	rector enaming.	positively and negatively.  Sort images into fake and real and talk about fake
	Decide if changes have improved writing and use the undo button to reverse		Choose suitable sounds to include in a podcast.		images around me. Compare the original
	changes.  Explain preferences for		Discuss the features of a recording you like.		image with my completed publication.
	typing or writing.		Suggest improvements to a digital recording and export them.		