Progress in Knowledge and Skills: Computing

Updated May 2024

Strand		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing Science	Programming	Begin to understand an algorithm is a set of instructions to achieve a specific purpose Understand that we control computers by giving them instructions Combine forwards and backwards commands to make a sequence Combine four direction commands to make sequences Plan a simple program Choose a command for a given purpose Show a series of commands can be joined together Give a sequence of instructions to a floor Robot or sprite Begin to debug instructions when a floor robot does not reach the intended destination Begin to predict what will happen for a short sequence of instructions in a program	Describe a series of instructions as a sequence Explain that a sequence of commands has a start and an outcome Explain what happens when we change the order of commands Use logical reasoning to predict the outcome of a sequence Combine a range of commands to make increasingly more complex sequences Understand that instructions in an algorithm need to be in order, clear and unambiguous Create a simple program on screen, correcting any errors, with a particular goal or purpose in mind Use the word debug to correct mistakes in an algorithm Evaluate the success of an algorithm Predict the outcome of a sequence Compare prediction to the program outcome	Create a sequence of commands using a block language to produce a given outcome Debug errors to accomplish specific goal Work with others to decompose a problem into smaller steps to plan a project Explain the order (sequence) of commands can affect the outcome (same commands, different order -> same or different outcome) Identify different sequences can achieve the same outcome Explain simple, sequence-based algorithms independently Use logical reasoning to detect errors in programs	Plan a program using a block language which includes loops to produce a given outcome Debug errors in increasingly complex programs to accomplish a specific goal Independently decompose a problem into smaller steps to plan a project Identify patterns (repetition) in a sequence Understand repetition in programming is also called looping Identify a loop in a program Understand, identify and justify when to use 'infinite' or 'count controlled' loops Explain the importance of instruction order in a loop Explain an algorithm using sequence and repetition independently Use logical reasoning to detect and correct errors in programs	Plan a program which includes selection to produce a given outcome Debug errors in increasingly complex programs to accomplish a specific goal Plan a solution to a problem using decomposition Define that conditional statements (selection) are used in computer programs Explain a loop can stop when a condition is met (number of times or event) Explain a that program flow can branch according to a condition Use a condition in an if…then… statement to produce a given outcome Explain an algorithm using sequence, repetition and selection independently Use logical reasoning to detect errors in increasingly complex programs	Plan a program which includes variables to produce a given outcome Debug errors in increasingly complex programs to accomplish a specific goal Solve problems using decomposition, tackling each part separately Define 'variable' as something that is changeable Explain that a variable has a name and a value Identify a variable in an existing program Use a variable in a conditional statement to control the flow of a program Clearly and concisely explain algorithms using sequence, repetition, selection and variables independently Use logical reasoning to detect errors in increasingly complex programs

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Computing Science	Computing, Systems and Networks		Recognise uses of information technology in school

Identify a computer and its main parts

Use a mouse in different ways e.g. to drag and drop, create a picture and open a file | Identify information technology in school and beyond

Explain how information technology helps us

Recognise the uses and features of information technology

Continue to practise mouse skills independently | Explain how a computer network can be used to share information

Explore how digital devices can be connected

Recognise the physical components of a network

Explain how digital devices function

Identify input and output devices | Describe how networks physically connect to other networks

Recognise how networked devices make up the internet

Describe how content can be added and accessed on the World Wide Web

Recognise how the content of the WWW is created and shared by people

Describe the current limitations of World Wide Web media | Explain that computers can be connected together to form systems

Recognise the role of computer systems in our lives

Recognise how information is transferred over the internet

Explain how sharing information online lets people in different places work together

Contribute to a shared project online

Evaluate different ways of working together online | Continue to develop online searching skills to enhance online communication and collaboration |
| Information Technology | Creating Media | Text | Identify and find keys on a keyboard

Add and remove text using basic typing skills (including use of space bar, backspace to delete and basic, age-appropriate punctuation)

Begin to save work to an appropriate location (hard drive and Google Drive), with support

Begin to retrieve and edit work, with support | Identify and find keys on a keyboard with increased confidence and speed

Type capital letters

Change font, style (bold, italic and underline) and size of text

Save, print, retrieve and edit work from appropriate location (hard drive and Google Drive) independently

Upload images or movies to appropriate place (hard drive and Google Drive), with support | Combine text and images to share a message

Consider how different layouts can suit different purposes

Type with increased confidence and speed using age-appropriate punctuation

Use return to create paragraphs

Change orientation of text

Wrap text around an image

Recognise a document can be formatted with placeholders | (Use cross-curricular opportunities to consolidate previous learning from Year 1 – Year 3) | (Use cross-curricular opportunities to consolidate previous learning from Year 1 – Year 3) | Recognise components of a webpage layout

Create a webpage including text, images, hyperlinks and embedded content

Understand the need for a navigation path |

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Information Technology	Creating Media	Images	Create/edit a digital drawing using a range of 'tools' such as brushes, pens, shapes, and set the size, colour and shape Explain why tools were chosen and used	Use a digital device to take photographs Edit a photograph using a range of tools Recognise that photographs can be changed Add and resize images (including insert clip art/copy & paste an image)	Change the orientation of images	Use a Chromebook to (further) manipulate images Recognise that images can be changed for different purposes Use the most appropriate tool for a particular purpose Consider the impact of changes made on the quality of the image	Recognise an image is comprised of separate objects Add, remove, modify and combine objects to create graphical drawing on a computer Recognise objects are layered Recognise that objects can be modified in groups Consider the impact of choices made	Create 3D graphical objects on a computer Alter the view of a 3D space Modify 3D objects Combine 3D objects to create desired effect Apply blank 3D objects as placeholders to create holes
	Creating Media	Multimedia		Experiment with sound using a Chromebook/iPad Use software to create and edit digital music for a purpose Begin to explain which tools were chosen and used	Understand animation is a sequence of drawings or photographs Relate animated movement with a sequence of images Plan an animation Review and improve an animation Evaluate the impact of adding other media to an animation	Press/tap buttons to start and stop recordings Recognise recorded audio is stored as a file Edit and alter recorded audio Layer sounds Save/export an audio file Consider the results of editing choices made	Identify the features of a good video Plan a video production using a story board Use a computer to make a video Recognise a video can be improved through editing Consider the impact of changes made on the quality of the video	(Use cross-curricular opportunities to consolidate previous learning from Year 1 – Year 5)

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Information Technology	Data and information	Identify objects that can be counted Count objects with the same properties Compare groups of objects Describe objects in different ways Answer questions about a group of objects	Recognise that objects can be counted and compared using tally charts Recognise objects can be represented as pictures Create a pictogram Select objects by attribute and make comparisons Explain that information can be presented using a computer	Identify object attributes needed to collect relevant data Create a branching database Identify objects using a branching database Compare information shown in a pictogram with a branching database Explain that data can be used to answer questions	Collect data using a digital device Recognise that a sensor can be used as an input device for data collection Use a larger data set to find information Use a computer program to sort data by one attribute Export information and present data in a table and a graph	Use a form to collect information Navigate a flat-file database Apply knowledge of a database to ask and answer real-world questions Design a structure for a flat-file database Choose tools to select and analyse data to answer questions Select an appropriate graph to visually compare data Choose suitable ways to present information	Identify questions that can be answered using data Create a spreadsheet for a purpose Apply a formula that can be used to produce calculated data Recognise data can be calculated using different operations Evaluate results in comparison to the question asked Choose suitable ways to present data
Digital Literacy	Online Safety	Identify rules to keep us healthy and safe when we are using technology Use a simple password when logging on, where relevant Explain why we use passwords Recognise examples of personal information e.g. name, image Know who to tell if concerned about online content or contact Talk about their use of technology at home	Explain why information should not be shared Remember a simple password to log onto the computer or a website Identify rules for acceptable use of technology in school and home Recognise what personal information is and the need to keep it private Recognise that some information found online may not be true Know how to report concerns about online content or contact at school or at home	Explain why we need to keep a password safe Recognise that digital content belongs to the person who first created it, but we can give permission for others to use it Recognise when to share personal information and when not to Recognise that some people lie about who they are online Explain how they would report concerns about online content or contact	Remember and use an individual password Recognise what kinds of websites are trustworthy sources of information Recognise the benefits and risks of different apps and websites Evaluate the consequences of unreliable content Understand that games and social media sites have age restrictions	Create a strong password and explain why this is important Know where to find copyright free images and audio, and why this is important Critically evaluate websites for reliability of information and authenticity Demonstrate responsible use of online services, and know a range of ways to report concerns	Explain what makes a strong password and why this is important at school and in the wider world Describe how algorithms are used to track online activities with a view to targeting advertising and information Know that there are laws around the purchase of games; the production, sending and storage of images; and what is written online Consider the ownership and uses of images and web content (copyright)

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	Digital Research		Search for content on a given website	Search for information in a single site

Understand that search engines select pages according to keywords found in the content | Use a standard search engine to find information

Understand that search engines rank pages according to relevance. | Use filters to make more effective use of a standard search engine

Understand that search engines use a cached copy of the crawled web to select and rank results | Use of a range of search engines appropriate to finding information that is required

Understand that search engines rank pages based on the number and quality of in-bound links |