Rosecroft Primary School
Computing and Online Safety Curriculum
Progression of knowledge and skills

National Curriculum Expectations

Nursery

Development matters – expressive arts and design

Start to make marks intentionally in a range of ways, including using a tablet or computer.

EYFS Understanding the World (Technology)

Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

KS1

Pupils should be taught to:

- 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.

KS2

Pupils should be taught to:

- 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.

APS Computing Intent, implementation and Impact

Intent

As technology becomes an increasingly important aspect of our day to day lives its significance to children is almost impossible to overstate. It is often recognised that children in the current education system are going to be employed for jobs which do not currently exist. With this in mind our computing curriculum provides our children with skills which can be applied across all forms of technology, allowing them to **grow** and develop into adults who are fully prepared for their futures. The computing curriculum aims to **inspire** our children through the opportunities provided to them, exploring and discovering the wonders of technology whilst **achieving**

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the requirements of the National Curriculum. As per our wider curriculum we also foster attitudes of confidence, respect, co-operation, flexibility, perseverance and independence.

Through the teaching of computing we aim for children to be able to:

- Know how to use technology safely and respectfully by keeping personal information private and seeking help when they have concerns
- Know how to design, write and debug simple programs
- Know the opportunities provided by technology and where it could be effectively used
- Know how to use search technologies effectively to find specific information online
- Know how to evaluate articles read online and understand reliability on the internet
- Know and understand about copyright
- Know the basic skills of using a computer – saving and retrieving files, operating a mouse, typing at a reasonable speed
- Know how to use a variety of technology types
- Know how to use computers to manipulate data

Implementation

We understand that a high-quality computing education is essential for pupils to understand modern information and communication technologies (ICT), and for them to use these skills to become responsible, competent, confident and creative participants of an increasingly digital world.

We will deliver the requirements of the key stage 1 (KS1) and key stage 2 (KS2) computing programmes of study using the Teach Computing curriculum, and ensure that our pupils have the digital skills they need. We aim to inspire pupils to continue to learn and apply the skills they will learn at secondary school, university, and beyond in the workplace. It is also vitally important that children understand the dangers of being online, and will be taught how to stay safe online from Year 1 through to the end of Year 6.

Basic computer skills are often built upon through topic lessons. For example, technology will often be used to research information and the class teachers will introduce relevant computer skills in order for this to be successful. The computer suite is also available during some lunch times for children to explore their own interests.

Children in Year 5 have the opportunity to become Digital Leaders for the school. Their responsibilities include checking all technology is returned and on charge at the end of the day; helping in lessons on request of a class teacher and supporting computing projects across the school. They also support the running of code club during part of the year, this after school club is open to all of KS2 and revolves around completing different coding projects.

Events, such as Safer Internet Day and Computer Science Week, provide extra provision and allow children to explore these ideas further.

Impact

The impact of our Computing curriculum will be seen across the school in the learning environment through display materials, resources and children's work samples. Children will use technical vocabulary accurately. All children in the school will be able to speak confidently about their computing learning, skills and knowledge. Impact is measured in lessons through the use of key questioning, child-led assessment and quizzes. Teacher assessment against key assessment criteria for each unit is undertaken on a termly basis. From this data class teachers can address the needs and gaps for children within their class and the computing subject lead can view trends across the school using this to decide on curriculum changes and improvements.

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Key Vocabulary (threaded through units)

Algorithm, blogging, browser, ebook, code, command, computer, copyright, debug, digital, edit, execute, input, internet, keyboard, monitor, mouse, network, output, parental controls, plagiarism, post, process, program, repetition, screen, script, search, sequence, selection, software, upload, variable, world wide web

Online Safety Vocab: accept, account, adult, communicate, cyberbullying/bullying, danger, email, fraud/fraudulent. information, internet, junk, key, link, meet, message, online, password, personal, phishing, plagiarism, private, profiles, public, reliable, safe, scam, secure, share, social media, spam, stranger, tell, trusted, victim, virus,

Skills Progression			
Computing skills + knowledge	**KS1 – Y1 and Y2**	**Lower KS2 – Y3 and Y4**	**Upper KS2 – Y5 and Y6**

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<table>
<tr><td></td><td colspan="3">Within the ‘Teach Computing’ (www.teachcomputing.org) Curriculum, every year group learns through units within the same four themes:
Computing Systems and Networks
Programming
Data and Information
Creating Media
This approach allows us to use the spiral curriculum approach to progress skills and concepts from one year group to the next

See Learning Maps from ‘Teach Computing’ that illustrate progression across all year groups</td></tr>
<tr><td></td><td>KS1 – Y1 and Y2</td><td>Lower KS2 – Y3 and Y4</td><td>Upper KS2 – Y5 and Y6</td></tr>
</table>

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Online Safety	Children begin to consider their activity on the internet and learn about ways to keep themselves safe and why it is important to do so. They also compare appropriate and inappropriate activity on the internet and decide what to do next. **KS1 Computing National Curriculum** Children can use technology safely and respectfully, keeping personal information private; they identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. Children can: ➢ identify what things count as personal information; ➢ identify what is appropriate and inappropriate behaviour on the internet; ➢ agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords; ➢ seek help from an adult when they see something that is unexpected or worrying; ➢ demonstrate how to safely open and close applications and log on and log off from websites; ➢ use key vocabulary to demonstrate knowledge and understanding in this strand: safe, meet, accept, reliable, tell, online, trusted, adult, information, safety, personal, key, question, tell, safe, share, stranger, danger, internet.	Children become more aware of their digital footprint by reflecting on their experience on the internet. They are able to understand more about age-appropriate websites and adverts and how adverts are used by companies. Children are also introduced to the concept of plagiarism and citation. **KS2 Computing National Curriculum** Children use technology safely, respectfully and responsibly. They recognise acceptable/unacceptable behaviour and identify a range of ways to report concerns about content and contact. Children can: ➢ reflect on their own digital footprint and behaviour online; ➢ identify what is appropriate and inappropriate behaviour on the internet, recognising the term cyberbullying; ➢ agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords; ➢ seek help from an adult when they see something that is unexpected or worrying; ➢ demonstrate understanding of age-appropriate websites and adverts; ➢ use key vocabulary to demonstrate knowledge and understanding in this strand: safe, meet, accept, reliable, tell, online, trusted, adult, information, safety, personal, internet, world wide web, communicate, message, social media, email, password, cyberbullying/bullying, plagiarism, profiles, account, private, public.	Children are encouraged to identify online risks and share their knowledge of the risks and consequences for people online. They begin to think more critically about what they see online and look at the concept of fake news and false photographs. **KS2 Computing National Curriculum** Children use technology safely, respectfully and responsibly. They recognise acceptable/unacceptable behaviour and identify a range of ways to report concerns about content and contact. Children can: ➢ protect their password and other personal information; ➢ be a good online citizen and friend; ➢ judge what sort of privacy settings might be relevant to reducing different risks; ➢ seek help from an adult when they see something that is unexpected or worrying; ➢ discuss scenarios involving online risk; ➢ use key vocabulary to demonstrate knowledge and understanding in this strand: spam, link, privacy, virus, scam, phishing, inbox, junk, sender, subject, secure, safe, account, online, private, social media, adverts, cyberbullying, reporting, anonymous, victim, fraud/fraudulent, policy, private/personal.

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Key Assessment Criteria – KS1	
Year 1:	**Year 2:**
Technology and Information **All children should be able to:** Explain technology as something that helps us Name the main parts of a computer Use a mouse to open a program Explain that writing on a computer is called typing Open work from a file Identify rules to stay safe and healthy when using technology in and beyond the home **Most children will be able to:** Locate examples of technology in the classroom Switch on and log into a computer Click and drag to make objects on a screen Type a name on a computer Use the arrow keys to move the cursor Give examples of some of the rules **Some children will be able to:** Explain how technology examples help us Use a mouse to click and drag Use a mouse to create a pictures Use shift key to type capital letters and save work to a file Delete letters Discuss how we benefit from these rules **Data and Information** **All children should be able to:** Describe objects using labels Count objects Describe an object Group similar objects Choose how to group objects Decide how to group objects to answer a questions **Most children will be able to:** Match objects to groups Group objects Describe a property of an object Group objects in more than one way Describe groups of objects Compare groups of objects **Some children will be able to:** Identify the label for a group of objects	**Technology and Information** **All children should be able to:** Identify examples of computers Explain the purpose of information technology in the home Find examples of information technology Demonstrate how information technology is used in a shop List different uses of information technology Identify choices made when using information technology **Most children will be able to:** Describe some uses of computers Open a file Talk about uses of information technology Recognise that information technology can be created Recognise how to use information technology responsibly Explain simple guidance for using information technology in different environments and settings **Some children will be able to:** Identify that a computer is a part of information technology Move and resize images Compare types of information technology Explain how information technology helps people Say how rules/guides can help Enjoy a variety of activities **Data and Information** **All children should be able to:** Record data in a tally chart Enter data onto a computer Organise data in a tally chart Tally objects using a common attribute Choose a suitable attribute to compare people Use a computer program to present information in different ways **Most children will be able to:** Represent a tally count as a total Use a computer to view data in a different format Use a tally chart to create a pictogram Create a pictogram to arrange objects by an attribute Collect the data needed Share what has been found out using a computer **Some children will be able to:** Compare totals in a tally chart

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Count a group of objects
Find objects with similar properties
Count how many objects share a property
Record how many objects are in a group
Record and share findings

Creating Media - Painting
All children should be able to:
Make marks on a screen and explain which tools were used
Make marks with the square and line tools
Choose appropriate shapes
Know that different paint tools do different jobs
Make dots of colour on the page
Explain that pictures can be made in lots of different ways
Most children will be able to:
Draw lines on a screen and explain which tools were used
Use the shape and line tools effectively
Make appropriate colour choices
Choose appropriate paint tools and colours to recreate the work of an artist
Change the colour and brush sizes
Spot the differences between painting on computers and paper
Some children will be able to:
Use the paint tools to draw a picture
Use the shape and line tools to recreate the work of an artist
Create a picture in the style of an artist
Say which tools were helpful and why
Use dots of colour to create a picture in the style of an artist independently
Say whether painting using a computer or paper is preferred

Creating Media - Writing
All children should be able to:
Open a word processor
Enter text into a computer
Type capital letters
Select a word by double-clicking
Say what tool was used to change the text
Write a message on a computer and on paper
Most children will be able to:
Recognise keys on a keyboard
Use letter, number and space keys
Explain what keys learnt about already do
Select all of the text by clicking and dragging
Decide if changes have improved writing
Compare using a computer with using a pencil and paper

Use pictograms to answer simple questions about objects
Explain what a pictogram shows
Answer 'more than/less than' and 'most/least' questions about an attribute
Create a pictogram and draw conclusions from it
Give simple examples of why information should not be shared

Creating Media - Photography
All children should be able to:
Sort devices into old and news
Explain the process of taking a good photograph
Identify what is wrong with a photograph
Explore the effect that light has on a photo
Recognise that images can be changed
Apply a range of photography skills to capture a photo
Most children will be able to:
Talk about how to take a photograph
Take photos in both landscape and portrait format
Discuss how to take a good photograph
Experiment with different light sources
Use a tool to achieve a desired effect
Recognise which images have been changed
Some children will be able to:
Capture digital photos and talk about experiences
Explain why a photo looks better in portrait or landscape format
Improve a photograph by retaking it
Focus on an object
Explain choices
Identify which images are real and which have been changed

Creating Media - Music
All children should be able to:
Identify simple differences in pieces of music
Create a rhythm pattern
Connect images with sounds
Identify hat music is a sequence of notes
Describe an animal using sounds
Reopen work
Most children will be able to:
Listen with concentration to a range of music
Play an instrument following a rhythm pattern
Use a computer to experiment with pitch and duration
Use a computer to create a musical pattern using three notes
Explain choices
Explain how to make work better

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Some children will be able to: Identify and find keys on a keyboard Use backspace to remove text Identify the toolbar and use bold, italic and underline Change the font Use 'undo' to remove changes Say which method is preferred **Programming A** **All children should be able to:** Predict outcome of a command on a device Follow an instruction Compare forwards and backwards movements Compare left and right turns Explain what a program should do Identify several possible solutions **Most children will be able to:** Follow an instruction Recall words that can be acted out Start a sequence from the same place Experiment with turn and move commands to move a robot Choose the order of commands in a sequence Plan two programs **Some children will be able to:** Run a command on a device Give directions Predict the outcome of a sequence involving forwards and backwards commands Predict the outcome of a sequence involving up to four commands Debug a program Use two different programs to get to the same place **Programming B** **All children should be able to:** Find which commands move a sprite Use more than one block by joining them together Find blocks which have numbers Show that a project can include more than one sprite Choose appropriate artwork for a project Use sprites which match a design **Most children will be able to:** Use commands to move a sprite Use a start block in a program Change the value Delete a sprite	**Some children will be able to:** Describe how music aids feelings Explain that music is created and played by humans Relate an idea to a piece of music Refine a musical pattern on a computer Save work Listen to music and describe how it aids feelings **Programming A** **All children should be able to:** Follow instructions given by someone else Create different algorithms for a range of sequences Follow a sequence Explain choices made for a mat design Explain what an algorithm should achieve Plan algorithms for different parts of a task **Most children will be able to:** Choose a series of words that can be enacted as a sequence Use an algorithm to program a sequence on a floor robot Predict the outcome of a sequence Identify different routes around a mat Create an algorithm to meet a goal Test and debug each part of a program **Some children will be able to:** Give clear and unambiguous instructions Show the difference in outcomes between two sequences that consist of the same commands Compare a prediction to the program outcome Test a mat to make sure it is usable Use an algorithm to create a program Put together the different parts of an algorithm **Programming B** **All children should be able to:** Identify the start of a sequence Predict the outcome of a sequence of commands Tell the actions of a sprite in an algorithm Choose backgrounds for a design Choose images for a design Compare a project to a created design **Most children will be able to:** Identify that a program needs to be started Match two sequences with the same outcome Decide which blocks to use to meet the design Choose characters for a design

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Decide how each sprite will move Add programming blocks based on an algorithm **Some children will be able to:** Compare different programming tools Run a program Say what happens when a value changes Add blocks to each sprite Create an algorithm for each sprite Test the programs created	Create an algorithm Improve a project by adding features **Some children will be able to:** Show how to run a program Change the outcome of a sequence of commands Build the sequences of blocks needed Create a program based on a new design Build sequences of blocks to match a design Debug
Key Assessment Criteria – KS2	

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Year 3	Year 4	Year 5	Year 6
Technology and Information **All children should be able to:** Explain that digital devices access inputs Classify input and output devices Explain how to use digital devices for different activities Recognise different connections Recognise that a computer network is made up of a number of devices Identify how devices in a network are connected with one another **Most children will be able to:** Explain that digital devices produce outputs Model a simple process Recognise similarities between using digital devices and non-digital tools Explain how messages are passed through multiple connections Demonstrate how information can be passed between devices Identify networked devices around me **Some children will be able to:** Follow a process Design a digital device Suggest differences between using digital devices and non-digital tools Discuss why we need a network switch Explain the role of a switch, server and wireless access point in a network Identify the benefits of computer networks **Data and Information** **All children should be able to:** Investigate questions with 'yes/no' answers Select an attribute to separate objects into groups Select objects to arrange in a branching database Create 'yes/no' questions using given attributes	**Technology and Information** **All children should be able to:** Describe the internet as a network of networks Describe different networked devices and how they connect Explain the types of media that can be shared on the World Wide Web (WWW) Create media which can be found on websites Explain that websites and content are created by people Explain that not everything on the World Wide Web is true **Most children will be able to:** Demonstrate how information is shared across the internet Explain how the internet allows us to view the World Wide Web Describe where websites are stored then uploaded to the WWW Recognise how to add content to the WWW Suggest who owns the content on websites Explain why some information found online may not be honest, accurate or legal **Some children will be able to:** Discuss why a network needs protecting Recognise that the WWW is part of the internet that contains websites and web pages Describe how to access websites on the WWW Explain that new content can be created online Explain that there are rules to protect content Explain why people need to think carefully before sharing or resharing content **Data and Information** **All children should be able to:** Choose a data set to answer a given question Explain that sensors are input devices Identify a suitable place to collect data Import a data set Propose a question that can be answered using logged data	**Technology and Information** **All children should be able to:** Explain that systems are built using several parts. Identify tasks managed by computer systems. Recognise that data is transferred using agreed methods. Recognise connected digital devices allow us to access shared files stored online. Suggest strategies to ensure successful group work. Identify different ways of working together online. **Most children will be able to:** Identify human elements of a computer system Explain that networked digital devices have unique addresses Send information over the internet in different ways Make thoughtful suggestions during group work Recognise that working together on the internet can be public or private **Some children will be able to:** Explain that computer systems communicate with other devices Explain benefits of a given computer system Explain that data is transferred over networks in packets Explain that the internet allows different media to be shared Compare working online with working offline Explain how the internet enables effective collaboration **Data and Information** **All children should be able to:** Create multiple questions about the same field Navigate a flat-file database to compare different views of information Explain how information can be grouped Choose which field and value are required to answer a given questions Select an appropriate chart to visually compare data	**Technology and Information** **All children should be able to:** Complete a web search to find specific information. Explain why we need tools to find things online. Explain that search results are ordered. Describe some of the ways that search results can be influenced. Explain the different ways in which people communicate. Compare different methods of communicating on the internet. **Most children will be able to:** Refine a search. Recognise the role of web crawlers in creating an index. Explain that a search engine follows rules to rank relevant pages. Recognise some limitations of search engines. Identify a variety of ways to communicate on the internet. Decide what is suitable to share and not to share online. **Some children will be able to:** Compare results from different search engines. Relate a search term to the search engine's index. Suggest some criteria that a search engine checks to decide on the order of results. Explain how search engines make money. Choose methods of communication to suit particular purposes. Explain that communication on the internet may not be private. **Data and Information** **All children should be able to:** Explain the relevance of data headings. Explain what an item of data is. Explain the relevance of a cell's data type. Recognise that data can be calculated using different operations. Use a spreadsheet to answer questions. Produce a graph.

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Select a theme and choose a variety of objects Explain what a pictogram tells me **Most children will be able to:** Make up a 'yes/no' question about a collection of objects Create a group of objects within an existing group Group objects using created 'yes/no' questions Explain that questions need to be ordered carefully to split objects into similarly sized groups Create questions and apply them to a tree structure Explain what a branching database tells me **Some children will be able to:** Create two groups of objects separated by one attribute Arrange objects into a tree structure Prove a created branching database works Compare two branching database structures Use a created branching database to answer questions Compare two ways of presenting information **Creating Media - Animation** **All children should be able to:** Draw a sequence of pictures Predict what an animation will look like Break down a story into settings, characters and events Use onion skinning to help make small changes between frames Explain ways to make an animation better Add other media to an animation **Most children will be able to:** Create an effective flip book-style animation Explain why little changes are needed for each frame	Interpret data that has been collected using a data logger **Most children will be able to:** Suggest questions that can be answered using a given data set Use data from a sensor to answer a given question Identify the intervals used to collect data Use a computer to view data in different ways Plan how to collect data using a data logger Draw conclusions from the data collected **Some children will be able to:** Identify data that can be gathered over time Identify that data from sensors can be recorded Talk about the data that I have captured Use a computer program to sort data Use a data logger to collect data Explain the benefits of using a data logger **Creating Media – Photo editing** **All children should be able to:** Identify changes that can be made to an image Explain what has changed in an edited image Talk about changes made to images Identify how an image has been retouched Sort images into 'fake' and 'real' and explain choices Consider effect of adding other elements to created work **Most children will be able to:** Explore how images can be changed in real life Change the composition of an image by selecting parts of it Choose effects to make an image fit a scenario Give examples of positive and negative effects that retouching can have on an image Combine parts of images to create new images Compare the original image with a created publication **Some children will be able to:** Explain the effect that editing can have on an image Consider why someone might want to change the composition of an image	Ask questions that will need more than one field to answer **Most children will be able to:** Explain how information can be recorded Explain what a 'field' and a 'record' is in a database Group information to answer questions Outline how 'AND' and 'OR' can be used to refine data selection Refine a chart by selecting a particular filter Refine a search in a real-world context **Some children will be able to:** Order, sort and group data cards Choose which field to sort data by to answer a given question Combine grouping and sorting to answer more specific questions Choose multiple criteria to answer a given question Explain the benefits of using a computer to create graphs Present findings to a group **Creating Media – Video editing** **All children should be able to:** Explain that a video can include visual/audio media Identify and name digital devices that can record video and sound Select suitable devices and software to capture a video List features of an effective video Store, retrieve and export a recording to a computer Make edits to a video and improve the final outcome **Most children will be able to:** Explain the benefits of adding audio to a video Choose the most suitable digital device for recording a project Demonstrate suitable methods of using digital devices to capture a video Record videos demonstrating some of the features of an effective video Explain how to improve a video by reshooting and editing	**Most children will be able to:** Answer questions from an existing data set. Apply an appropriate number format to a cell. Construct a formula in a spreadsheet. Create a formula which includes a range of cells. Explain why data should be organised. Use a graph to show the answers to questions. **Some children will be able to:** Ask simple relevant questions which can be answered using data. Build a data set in a spreadsheet application. Identify that changing inputs changes outputs. Apply a formula to multiple cells by duplicating it. Apply a formula to calculate the data needed to answer questions. Suggest when to use a table or graph. **Creating Media – 3D modelling** **All children should be able to:** Discuss similarities and differences between 2D and 3D objects. Identify how graphical objects can be modified. Rotate a 3D object. Identify 3D shapes needed to create a model of a real-world object. Plan a 3D model. Decide how a created model can be improved. **Most children will be able to:** Explain why we might represent 3D objects on a computer. Resize a 3D object. Position 3D objects in relation to each other. Create digital 3D objects of an appropriate size. Choose which 3D objects needed to construct a model. Modify a created model to improve it. **Some children will be able to:** Select, move and delete a digital 3D shape. Change the colour of a 3D object. Select and duplicate multiple 3D objects. Group a digital 3D shape and a placeholder to create a hole in an object. Modify multiple 3D objects. Evaluate a created model against a given criterion.

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Describe an animation that is achievable on screen
Review a sequence of frames to check created work
Evaluate another learner's animation
Explain why other media was added to an animation
Some children will be able to:
Explain how an animation/flip book works
Crate an effective stop frame animation
Create a storyboard
Evaluate the quality of a created animation
Improve a created animation based on feedback
Evaluate a final film

Creating Media - Publishing
All children should be able to:
Explain the different between text and images
Change font style, size and colours for a given purpose
Define the term 'page orientation'
Choose the best locations for my content
Identify different layouts
Identify uses of desktop publishing in the real world
Most children will be able to:
Recognise that text and images can communicate messages clearly
Edit text
Recognise placeholders and say why they are important
Paste text and images to create a magazine cover
Match a layout to a purpose
Say why desktop publishing might be helpful
Some children will be able to:
Identify the advantages and disadvantages of using text and images
Explain that text can be changed to communicate more clearly
Create a template for a particular purpose

Explain why choices fit a scenario
Choose appropriate tools to retouch an image
Talk about fake images around me
Evaluate the impact of a created publication on others through feedback

Creating Media – Audio editing
All children should be able to:
Identify digital devices that can record sound and play it back
Use a device to record audio and play back sound
Plan and write the content for a podcast
Open a digital recording from a file
Discuss sounds that other people combine
Explain that digital recordings need to be exported to share them
Most children will be able to:
Identify inputs and outputs required to play audio and record sound
Suggest how to improve a recording
Discuss why it is useful to be able to save digital recordings
Discuss ways in which audio recordings can be altered
Choose suitable sounds to include in a podcast
Discuss the features of a digital recording I like
Some children will be able to:
Recognise the range of sounds that can be recorded
Discuss what other people include when recording sound for a podcast
Save a digital recording as a file
Edit sections of an audio recording
Use editing tools to arrange sections of audio
Suggest improvements to a digital recording

Programming A
All children should be able to:
Program a computer by typing commands
Use a template to create a design for a program
Identify everyday tasks that include repetition as part of a sequence, e.g. brushing teeth, dance moves, etc.

Recognise choices when making videos that will impact on the quality of the final outcome
Some children will be able to:
Plan a video project using a storyboard
Locate and identify working features of digital devices that can record video
Demonstrate safe use and handling of devices
Explain why lighting and angle are important in creating effective videos
Select correct tools to make edits to a video
Evaluate a video and share opinions

Creating Media – Vector drawing
All children should be able to:
Recognise that vector drawings are made using shapes
Identify the shapes used to make a vector drawing
Use 'zoom' tool to help add details to drawings
Identify each added object creates new layers in the drawing
Copy part of a drawing by duplicating several objects
Create alternatives to vector drawings
Most children will be able to:
Identify the main drawing tools
Explain that each element added to a vector drawing is an object
Explain how alignment grids and resize handles can be used to improve consistency
Identify which objects are in the front or back layer of a drawing
Group to create a single object
Suggest improvements to a vector drawing
Some children will be able to:
Discuss how a vector drawing is different from paper-based drawings
Move, resize and rotate duplicated objects
Modify objects to create different effects
Change the order of layers in a vector drawing
Reuse a group of objects to further develop a vector drawing
Apply learned skills about vector drawings

Programming A

Creating Media – Web page creation
All children should be able to:
Explore a website.
Recognise common features of web pages.
Explain why people should use copyright-free images.
Add content to a designed web page.
Explain what a navigation path is.
Explain the implication of linking to content owned by others.
Most children will be able to:
Discuss the different types of media used on websites.
Suggest media to include on a created web page.
Find copyright-free images.
Preview what a created web page looks like.
Describe why navigation paths are useful.
Create hyperlinks to link to other people's work.
Some children will be able to:
Know that websites are written in HTML code.
Draw a web page layout that suits a given purpose.
Describe what is meant by the term 'fair use'.
Evaluate what a created web page looks like on different devices and suggest/make edits.
Make multiple web pages and link them using hyperlinks.
Evaluate the user experience of a website.

Programming A
All children should be able to:
Identify examples of information that is variable.
Identify a program variable as a placeholder in memory for a single value.
Decide where in a program to change a variable.
Choose the artwork for a created project.
Create the artwork for a created project.
Identify ways that a created game could be improved.
Most children will be able to:
Explain that the way a variable change can be defined.
Explain that a variable has a name and a value.
Make use of an event in a program to set a variable.
Explain design choices in a created project.
Choose a name that identifies the role of a variable in a created project.
Extend a created game further using more variables.
Some children will be able to:

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Make changes to content after it has been added Choose a suitable layout for a given purpose Compare work made on desktop publishing to work created by hand **Programming A** **All children should be able to:** Identify the objects in a Scratch project (sprites, backdrops) Choose a word which describes an on-screen action for a created design Start a program in different ways Explain what a sequence is Build a sequence of commands Identify and name the objects needed for a project **Most children will be able to:** Explain that objects in Scratch have attributes (linked to) Create a program following a design plan Create a sequence of connected commands Combine sound commands Decide the actions for each sprite in a program Relate a task description to a design **Some children will be able to:** Recognise that commands in Scratch are represented as blocks Create a program following a design Explain that the objects in a created project will respond exactly to the code Order notes into a sequence Make design choices for created artwork Implement a created algorithm as code **Programming B** **All children should be able to:** Explain the relationship between an event and an action Choose a character for a created project Use a programming extension	Identify effect of changing the number of times a task is repeated Identify 'chunks' of actions in the real world Design a program that includes count-controlled loops **Most children will be able to:** Explain the effect of changing a value of a command Write an algorithm to produce a given outcome Identify patterns in a sequence, e.g. 'step 3 times' means the same as 'step, step, step' Predict the outcome of a program containing a count-controlled loop Use a procedure in a program Make use of a created design to write a program **Some children will be able to:** Create a code snippet for a given purpose Test an algorithm in a text-based language Use a count-controlled loop to produce a given outcome Choose which values to change in a loop Explain that a computer can repeatedly call a procedure Develop a created program by debugging it **Programming B** **All children should be able to:** List an everyday task as a set of instructions including repetition Modify loops to produce a given outcome Choose which action will be repeated for each object Identify which parts of a loop can be changed Evaluate the use of repetition in a project Refine the algorithm in a created design **Most children will be able to:** Predict the outcome of a snippet of code Choose when to use a count-controlled and an infinite loop Explain what the outcome of the repeated action should be Explain the effect of my changes Select key parts of a given project to use in my own design	**All children should be able to:** Build a simple circuit to connect a microcontroller to a computer Connect more than one output device to a microcontroller Explain that a condition is something that can be either true or false Explain that a condition being met can start an action Identify a condition to start an action (real world) Write an algorithm to control lights and a motor **Most children will be able to:** Program a microcontroller to light an LED Design sequences for given output devices Experiment with a 'do until' loop Identify a condition and an action in a created project Describe what a created project will do (the task) Use selection to produce an intended outcome **Some children will be able to:** Explain the use of an infinite loop Decide which output devices are controlled with a count-controlled loop Program a microcontroller to respond to an input Use selection (an 'if… then…' statement) to direct the flow of a program Create a detailed drawing of a created project Test and debug a created project **Programming B** **All children should be able to:** Recall how conditions are used in selection Use selection in an infinite loop to check a condition Explain that program flow can branch according to a condition Outline a given task Implement an algorithm to create the first section of a program Identify ways the program could be improved **Most children will be able to:** Identify conditions in a program Identify the condition and out comes in an 'if…then…else' statement	Identify that variables can hold numbers or letters. Recognise that the value of a variable can be changed. Recognise that the value of a variable can be used by a program. Create algorithms for a created project. Test the code written by themselves. Share a created game with others. **Programming B** **All children should be able to:** Apply knowledge of programming to a new environment. Identify examples of conditions in the real world. Use conditions to change variables. Explain the importance of the order of conditions in 'else… if…' statements. Decide what variables to include in a project. Create a program based on a created design. **Most children will be able to:** Test a program on an emulator. Use variables in an 'if… then… else…' statement to select the flow of a program. Experiment with different physical inputs. Use an operand (e.g. < > =) in an 'if… then…' statement. Design an algorithm for a created project. Test a created program against a design. **Some children will be able to:** Transfer a created program to a controllable device. Determine the flow of a program using selection. Explain that if you read the variable, the value remains. Modify a program to achieve a different outcome. Design a program flow for a created project. Use a range of approaches to find and fix bugs in a created algorithm.

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Identify additional features (from a given set of blocks) Test a program against a given design Make design choices and justify them **Most children will be able to:** Choose which keys to use for actions and explain those choices Choose a suitable size for a character in a maze Consider the real world when making design choices Choose suitable keys to turn on additional features Match a piece of code to an outcome Implement a created design **Some children will be able to:** Identify a way to improve a program Program movement Choose blocks to set up a created program Build more sequences of commands to make a design work Modify a program using a design Evaluate a created project	Build a program that follows my design **Some children will be able to:** Modify a snippet of code to create a given outcome Recognise that some programming languages enable more than one process to be run at once Evaluate effectiveness of the repeated sequences used in my program Re-use existing code snippets on new sprites Develop my own design explaining what my project will do Evaluate the steps followed when building a project	Design the flow of a program which contains 'if…then…else' Use a design format to outline a project Test a program Identify what setup code a project needs **Some children will be able to:** Modify a condition in a program Create a program with different outcomes using selection Show that a condition can direct program flow in one of two ways Identify the outcome of user input in an algorithm Share a program with others Extend a project further	

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