THAKEHAM PRIMARY SCHOOL

At Thakeham we CARE

CARE

courage ambition respect enjoyment

KNOWLEDGE DEVELOPMENT

OVERVIEW: Computing & Online Safety

SUBJECT: COMPUTING

NATIONAL CURRICULUM

Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims

The national curriculum for computing aims to ensure that all pupils:

♣ can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation

♣ can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems

♣ can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems

♣ are responsible, competent, confident and creative users of information and communication technology.

INTENT

Our aim is to provide a high-quality computing education, which equips children to use computational thinking and creativity to understand the potential of technology and start to build knowledge and skills that will help them make sense of, and contribute to, the society and world they live in. We will apply a variety of approaches and strategies to support understanding. We will apply and connect abstract concepts through creating prototypes and creating pictorial representations, which will lead to using symbols and coding languages. We will support the children to challenge misconceptions, and form connections and develop a coherent understanding and build on their growing knowledge. The curriculum will teach children key knowledge about how computers and computer systems work, and how they are designed and programmed. The children will have the opportunity to gain an understanding of computational systems of all kinds: plugged or unplugged. We want them to become digital creators, using technology to support other areas of their work and lives, and also to understand the responsibilities of being digital consumers on their time, relationships and wellbeing. We teach them to become good digital citizens, to know how to stay safe and keep others safe online, to be aware of the need to test out what and who they see and the importance of what they share in creating their own digital footprint.

By the time they leave Thakeham Primary, children will have gained key knowledge and skills in the three main areas of the computing curriculum:

Computer Science

- To enable children to become confident coders on a range of devices.
- To create opportunities for collaborative and independent learning.
- To develop children's understanding of technology and how it is constantly evolving.

Digital Literacy

- To enable a safe computing environment through appropriate computing behaviours.
- To allow children to explore a range of digital devices.
- To promote pupils' spiritual, moral, social and cultural development.

Information Technology

- To develop ICT as a cross-curricular tool for learning and progression.
- To promote learning through the development of thinking skills.
- To enable children to understand and appreciate their place in the modern world.

IMPLEMENTATION

To enable all children to access the different digital devices we have, we have developed a clear and effective, bespoke cross curricular scheme of work that provides coverage in line with the National Curriculum. Teaching and learning facilitates progression across the key stages within the strands of digital literacy, information technology and computer science. The computing curriculum is either taught discreetly or as a means to support the wider learning within the classroom. In addition, specific lessons relating to online safety and personal information are taught to the children. It is a key priority with children being taught what we mean by personal information, who should have access to it and how to keep it safe. Children are introduced to safe passwords and safe communication.

Our children begin their journey with technology in Early Years, with access to tablets and BeeBots. Teachers facilitate children's curiosity with challenge and modelling how to use the equipment carefully and safely.

In KS1 children continue their journey with the BeeBots, using them more precisely. They learn how to programme a BeeBot to a set criteria and begin to be able to debug when something doesn't work out the way they imagined. They become independent when logging on and off a chrome book using their class username and password. They learn about online safety and what to do if they encounter something which makes them feel uncomfortable as well as what personal information is and why it is important we don't share it with someone on the internet. These lessons link with our PSHE JIGSAW lessons. Coding then progresses from BeeBots onto a computer-based programme where children learn how to programme a variety of sprites.

In KS2, children continue this coding journey, not only making the sprites move, but interact with each other. They will have two units of physical computing using both a Crumble Kit and Micro-Bit. As children progress up KS2 the coding becomes more complex and they are able to create basic games with code. Their digital literacy skills are combined with English, science, history and geography and work is word processed and presentations are created using Google Slides. Children learn how to use the hardware we have in school, they are taught how to take and manipulate pictures, showing them that what they view in the media isn't always accurate. Lessons continue to have wider links within our PSHE JIGSAW lessons. The children are also taught internet safety throughout each year of KS2. They know how to keep themselves safe online and what to do if they come across something that makes them uncomfortable. Upper KS2 understand the importance of media balance and appreciate that as they get older, they are more responsible for their online presence and how often they access a variety of forms of media. They learn a new computing language of Python and consider the purpose and audience when creating stop frame animations.

Throughout all their computing work, the children will apply and develop the following computational thinking concepts and approaches and the computer science concepts and approaches.

Disadvantaged and SEND pupils are at the heart of all planning sequences in the school. Like with every other lesson, we deploy a range of scaffolds, differentiation and support strategies in order to ensure every pupil can access the learning. This is reviewed as part of the Assess, Plan, Do, Review cycle.

Jigsaw's Education for a Connected World is a framework to equip children and young people for digital life. It was written by the UK Council for Internet Safety and enables the development of teaching and learning as well as guidance to support children and young people to live knowledgeably, responsibly and safely in a digital world. It focuses specifically on eight different aspects of online education:

1. Self-image and identity	This strand explores the differences between online and offline identity beginning with self-awareness, shaping online identities and media influence in propagating stereotypes. It identifies effective routes for reporting and support and explores the impact of online technologies on self-image and behaviour.
2. Online relationships	This strand explores how technology shapes communication styles and identifies strategies for positive relationships in online communities. It offers opportunities to discuss relationships, respecting, giving and denying consent and behaviours that may lead to harm and how positive online interaction can empower and amplify voice.
3. Online reputation	This strand explores the concept of reputation and how others may use online information to make judgements. It offers opportunities to develop strategies to manage personal digital content effectively and capitalise on technology's capacity to create effective positive profiles.
4. Online bullying	This strand explores bullying and other online aggression and how technology impacts those issues. It offers strategies for effective reporting and intervention and considers how bullying and other aggressive behaviour relates to legislation.
5. Managing online information	This strand explores how online information is found, viewed and interpreted. It offers strategies for effective searching, critical evaluation of data, the recognition of risks and the management of online threats and challenges. It explores how online threats can pose risks to our physical safety as well as online safety. It also covers learning relevant to ethical publishing.
6. Health, well-being and lifestyle	This strand explores the impact that technology has on health, well-being and lifestyle e.g. mood, sleep, body health and relationships. It also includes understanding negative behaviours and issues amplified and sustained by online technologies and the strategies for dealing with them.
7. Privacy and security	This strand explores how personal online information can be used, stored, processed and shared. It offers both behavioural and technical strategies to limit impact on privacy and protect data and systems against compromise.
8. Copyright and ownership	This strand explores the concept of ownership of online content. It explores strategies for protecting personal content and crediting the rights of others as well as addressing potential consequences of illegal access, download and distribution.

National Curriculum Requirements

	Key Stage 1	Key Stage 2
	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.	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.

Support, modification and challenge

Our Computing curriculum has been written to support all pupils. Each lesson is sequenced so that it builds on the learning from the previous lesson, and where appropriate, activities are scaffolded so that all pupils can succeed and thrive.

Scaffolded activities provide pupils with extra resources, such as visual prompts, to reach the same learning goals as the rest of the class. Exploratory tasks foster a deeper understanding of a concept, encouraging pupils to apply their learning in different contexts and to make connections with other learning experiences.

Cycle A

		EYFS		Year 1 and 2		Year 3 and 4		Year 5 and 6	
	Autumn	**EYFS Photograph and digital art** Take a photograph of my junk modelling Take photos of the different areas in class and how to tidy them up **EYFS Knowledge and Skills** Explore and draw where technology is used in school, at home and in the world around Playing Simon Says	**EYFS Photograph and digital art** Using painting tools to make firework pictures Colouring on busy things **EYFS Computational thinking** Barefoot computing to give instructions in PE **EYFS Coding an Programming** Input a simple sequence of commands to control a beebot- Jolly Postman	**NCCE** **Y2 Computing systems and networks** – IT around us.	**NCCE** **Y2 Creating media** – Digital photography	**NCCE** **Y4 Computing systems and networks** – The Internet	**NCCE** **Y4 Creating media** – Audio production	**NCCE** **Y6 Computing systems and networks** – Communication and collaboration	**Y NCCE** **6 Creating media** – Web page creation
		Project Evolve **EYFS Copyright and Ownership** I can name my work and know it belongs to me.	**Project Evolve** **EYFS Self-image and Identity** I can recognise, online or offline, that anyone can say 'no' - 'please stop' - 'I'll tell' - 'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset. Smartie the Penguin	**Project Evolve** **Y2 Online Reputation** I can explain how information put online about someone can last for a long time.	**Project Evolve** **Y2 Copyright & Ownership** I can recognise that content on the internet may belong to other people.	**Project Evolve** **Y4 Online Reputation** I can describe how to find out information about others by searching online.	**Project Evolve** **Y4 Health, well-being & lifestyle** I can explain how using technology can be a distraction from other things, in both a positive and negative way.	**Project Evolve** **Y6 Health, well-being & lifestyle** I recognise and can discuss the pressures that technology can place on someone and how / when they could manage this.	**Project Evolve** **Y6 Online Relationships** I can describe how things shared privately online can have unintended consequences for others. e.g. screen-grabs.
	Spring	**EYFS Data handling** Create a tally chart of our favourite dinsoaurs Sort dinosaurs into types and take a photo **EYFS Sound** In PE record their different fairytale character voices and find ways to change their voice	**EYFS Video creation** Children to record each other in the role play areas- garden centre	**NCCE** **Y2 Programming A** – Robot algorithms	**NCCE** **Y2 Data and information** – Pictograms	**NCCE** **Y4 Programming A** – Repetition in shapes	**NCCE** **Y4 Data and information** – Data logging	**NCCE** **Y6 Programming A** – Variables in games	**NCCE** **Y6 Data and information** – Spreadsheets
		Project Evolve **EYFS Online Relationships** I can recognise some ways in which the internet can be used to communicate. Smartie the Penguin	**Project Evolve** **EYFS Managing Online Information** I can talk about how to use the internet as a way of finding information online. Using the Internet to research what seeds to plant in the spring. How to look after our sunflower seeds, use Google search engine and voice activated searching. **Project Evolve** **EYFS Online Reputation** I can identify ways I can put information on the Internet. **Project Evolve** **Y2 Online Bullying** I can describe ways that some people can be unkind online, who to turn to if I don't feel	**Project Evolve** **Y2 Online Bullying** I can explain what bullying is, how people may bully others and how bullying can make someone feel.	**Project Evolve** **Y2 Managing Online Information** I can explain what voice activated searching is and how it might be used, and know it is not a real person (e.g. Alexa, Google Now, Siri).	**Project Evolve** **Y4 Online Bullying** I can recognise when someone is upset, hurt or angry online.	**Project Evolve** **Y4 Privacy and Security** I can explain that internet use is never fully private and is monitored, e.g. adult supervision.	**Project Evolve** **Y6 Online Bullying** I can explain how someone would report online bullying in different contexts.	**Project Evolve** **Y6 Copyright & Ownership** I can demonstrate how to make references to and acknowledge sources I have used from the internet.

			safe online, understand that people can be unkind online.						
	Summer	**EYFS Word Processing** Busy things	**EYFS Word processing** Typing favourite memory in Acorns **EYFS Sound** Take photo of themselves, record voice over zip open mouth	**NCCE** **Y2 Creating media** – Digital music	**NCCE** **Y2 Programming B** – Programming quizzes	**NCCE** **Y4 Creating media** – Photo editing	**NCCE** **Y4 Programming B** – Repetition in games	**NCCE** **Y6 Creating media** – 3D modelling	**Y NCCE** **6 Programming B** –Sensing movement
		Project Evolve **EYFS Privacy and Security** I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location) and how not to share it online. Smartie the Penguin.		**Project Evolve** **Y2 Privacy and Security** I can explain and give examples of what is meant by 'private' and 'keeping things private'.	**Project Evolve** **Y2 Health, well-being & lifestyle** I can explain simple guidance for using technology in different environments and settings e.g. accessing online technologies in public places and the home environment.	**Project Evolve** **Y4 Copyright & Ownership** When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it.	**Project Evolve** **Y4 Self-image and Identity** I can explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this.	**Project Evolve** **Y6 Managing Online Information** I understand the concept of persuasive design and how it can be used to influences peoples' choices.	**Project Evolve** **Y6 Online Reputation** I can explain the ways in which anyone can develop a positive online reputation.

Cycle B

		EYFS		Year 1 and 2		Year 3 and 4		Year 5 and 6	
	Autumn	**EYFS Photograph and digital art** Take a photograph of my junk modelling Take photos of the different areas in class and how to tidy them up **EYFS Knowledge and Skills** Explore and draw where technology is used in school, at home and in the world around Playing Simon Says	**EYFS Photograph and digital art** Using painting tools to make firework pictures Colouring on busy things **EYFS Computational thinking** Barefoot computing to give instructions in PE **EYFS Coding an Programming** Input a simple sequence of commands to control a beebot- Jolly Postman	**NCCE** **Y1 Computing systems and networks** – technology around us.	**NCCE** **Y1 Creating media** – Digital Painting	**NCCE** **Y3 Computing systems and networks –** Connecting computers	**Y NCCE** **3 Creating media** – Stop-frame animation	**NCCE** **Y5 Computing systems and networks** - Systems and searching	**NCCE** **Y5 Creating media** – Video production
		Project Evolve **EYFS Copyright and Ownership** I can name my work and know it belongs to me.	**Project Evolve** **EYFS Self-image and Identity** I can recognise, online or offline, that anyone can say 'no' - 'please stop' - 'I'll tell' - 'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset. Smartie the Penguin	**Project Evolve** **Y1 Health, well-being & lifestyle** I can explain rules to keep myself safe when using technology both in and beyond the home.	**Project Evolve** **Y1 Online Relationships** I can give examples of when I should ask permission to do something online and explain why this is important.	**Project Evolve** **Y3 Self-image and Identity** I can explain what is meant by the term 'identity'.	**Project Evolve** **Y3 Online Relationships** I can explain what it means to 'know someone' online and why this might be different from knowing someone offline.	**Project Evolve** **Y5 Self-image and Identity** I can explain how identity online can be copied, modified or altered.	**Project Evolve** **Y5 Online Relationships** I can give examples of technology-specific forms of communication (e.g. emojis, memes and GIFs).
	Spring	**EYFS Data handling** Create a tally chart of our favourite dinsoaurs Sort dinosaurs into types and take a photo	**EYFS Video creation** Children to record each other in the role play areas- garden centre	**NCCE** **Y1 Programming A** – Moving a robot	**NCCE** **Y1 Data and information** – grouping data	**NCCE** **Y3 Programming A –** Sequencing sounds	**NCCE** **Y3 Data and information** Branching databases	**NCCE** **Y5 Data and information** Flat-file databases	**NCCE** **Y5 Programming A –** Selection in physical computing

		EYFS Sound In PE record their different fairytale character voices and find ways to change their voice							
		Project Evolve **EYFS Online Relationships** I can recognise some ways in which the internet can be used to communicate. Smartie the Penguin	**Project Evolve** **EYFS Managing Online Information** I can talk about how to use the internet as a way of finding information online. Using the Internet to research what seeds to plant in the spring. How to look after our sunflower seeds, use Google search engine and voice activated searching. **Project Evolve** **EYFS Online Reputation** I can identify ways I can put information on the Internet. **Project Evolve** **Y2 Online Bullying** I can describe ways that some people can be unkind online, who to turn to if I don't feel safe online, understand that people can be unkind online.	**Project Evolve** **Y1 Online Bullying** I can describe how to behave online in ways that do not upset others and can give examples	**Project Evolve** **Y1 Self-image and Identity** If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help.	**Project Evolve** **Y3 Online Reputation** I can give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal.	**Project Evolve** **Y3 Online Bullying** I can describe appropriate ways to behave towards other people online and why this is important.	**Project Evolve** **Y5 Online Reputation** I can describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect.	**Project Evolve** **Y5 Managing Online Information** I can evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results.
	Summer	**EYFS Word Processing** Busy things	**EYFS Word processing** Typing favourite memory in Acorns **EYFS Sound** Take photo of themselves, record voice over zip open mouth	**NCCE** **Y1 Creating media** – Digital writing	**NCCE** **Y1 Programming B** – Programming animations	**NCCE** **Y3 Creating media** – Desktop publishing	**NCCE** **Y3 Programming B** – Events and actions in programs	**NCCE** **Y5 Creating media** – Introduction to vector graphics	**NCCE** **Y5 Programming B** – Selection in quizzes
		Project Evolve **EYFS Privacy and Security** I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location) and how not to share it online. Smartie the Penguin.		**Project Evolve** **Y1 Managing Online Information** I know / understand that we can encounter a range of things online including things we like and don't like as well as things which are real or make believe / a joke.	**Project Evolve** **Y1 Privacy and Security** I can explain how passwords are used to protect information, accounts and devices.	**Project Evolve** **Y3 Health, Wellbeing & Lifestyle** I can explain why spending too much time using technology can sometimes have a negative impact on anyone; I can give some examples of both positive and negative activities where it is easy to spend a lot of time engaged.	**Project Evolve** **Y3 Privacy and Security** I can give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult.	**Project Evolve** **Y5 Copyright and Ownership** I can assess and justify when it is acceptable to use the work of others.	**Project Evolve** **Y5 Online Bullying** I can recognise online bullying can be different to bullying in the physical world and can describe some of those differences.

Knowledge Development

Computer Progression - Information Technology (using spreadsheets, creating presentations and manipulating graphics)

EYFS

Word Processing

Play on a touch screen game and use computers/keyboards/ mouse in role play.

Type letters with increasing confidence using a keyboard and tablet.

Dictate short, clear sentences into a digital device.

Data Handling

Identify a chart.

Sort physical objects, take a picture and discuss what I have done.

Present simple data on a digital device.

Presentations

Record my voice over a picture.

Create a simple digital collage.

Move and resize images with my fingers or mouse.

Video Creation

Know the difference between a photograph and video.

Record a short film using the camera

record and play a film. Watch films back.

Photography and Digital Art

Take a photograph.

Take a photograph and use it in an app.

Use a painting app and explore the paint and brush tools.

Sound

Record sounds with different resources.

Find ways to change your voice (tube, tin can, shouting to create an echo).

Record sounds/voices in storytelling and explanations.

Year 1 / 2

The Hardware / Basic Skills

Name the main parts of a computer.

Switch on and log into a computer.

Use a mouse to click and drag.

Use a mouse to open a program.

Click and drag to make objects on a screen.

Use a mouse to create a picture.

Say what a keyboard is for.

Type my name on a computer.

Save my work to a file.

Open my work from a file.

Use the arrow keys to move the cursor.

Delete letters.

Creating media – Digital painting

Make marks on a screen and explain which tools I used.

Draw lines 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.

Make appropriate colour choices.

Create a picture in the style of an artist.

Know that different paint tools do different jobs.

Choose appropriate paint tools and colours to recreate the work of an artist.

Say which tools were helpful and why.

Make dots of colour on the page.

Change the colour and brush sizes.

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.

Spot the differences between painting on a computer and on paper.

Say whether I prefer painting using a computer or using paper.

Data and information – Grouping data

Describe objects using labels.

Match objects to groups.

Identify the label for a group of objects.

Identify that objects can be counted.

Describe objects in different ways.

Choose, describe and record how to group similar objects.

Group objects in more than one way.

Count how many objects share a property.

Answer questions about groups of objects.

Creating media – Digital writing

Open a word processor.

Year 3 / 4

Creating Media – Stop Frame Animation

Predict what an animation will look like.

Explain why little changes are needed for each frame.

Create an effective stop-frame animation.

Use onion skinning to help me make small changes between frames.

Review a sequence of frames to check my work.

Evaluate the quality of my animation.

Add other media to my animation and explain why I needed it.

Creating Media – Audio Production

Identify the input and output devices used to record and play sound.

Use a computer to record audio.

Explain that the person who records the sound can say who is allowed to use it.

Re-record my voice to improve my recording.

Inspect the soundwave view to know where to trim my recording.

Discuss what sounds can be added to a podcast.

Explain how sounds can be combined to make a podcast more engaging.

Save my project so the different parts remain editable.

Plan appropriate content for a podcast.

Record content following my plan.

Review the quality of my recordings and improve them.

Open my project to continue working on it.

Arrange multiple sounds to create the effect I want.

Explain the difference between saving a project and exporting an audio file.

Listen to an audio recording to identify its strengths.

Suggest improvements to an audio recording.

Choose appropriate edits to improve my podcast.

Data and Information – Branching Databases

Investigate questions with yes/no answers.

Make up a yes/no question about a collection of objects.

Create two groups of objects separated by one attribute.

Select an attribute to separate objects into groups.

Create a group of objects within an existing group.

Arrange objects into a tree structure.

Select objects to arrange in a branching database.

Group objects using my own yes/no questions.

Test my branching database to see if it works.

Create yes/no questions using given attributes.

Compare two branching database structures.

Explain that questions need to be ordered carefully to split objects into similarly sized groups.

Independently create questions to use in a branching database.

Create questions that will enable objects to be uniquely identified.

Create a physical version of a branching database.

Create a branching database that reflects my plan.

Work with a partner to test my identification tool.

Suggest real-world uses for branching databases.

Creating Media – Desktop publishing

Explain the difference between text and images.

Recognise that text and images can communicate messages clearly.

Year 5 / 6

Creating Media – Video Production

Explain that video is a visual media format.

Identify features of videos.

Compare features in different videos.

Identify and find features on a digital video recording device.

Experiment with different camera angles.

Make use of a microphone.

Suggest filming techniques for a given purpose.

Capture video using a range of filming techniques.

Review how effective my video is.

Outline the scenes of my video.

Decide which filming techniques I will use.

Create and save video content.

Store, retrieve, and export my recording to a computer.

Explain how to improve a video by reshooting and editing.

Select the correct tools to make edits to my video.

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.

Evaluate my video and share my opinions.

Data and information – Flat-file databases

Create a database using cards.

Explain how information can be recorded.

Order, sort, and group my data cards.

Explain what a field and a record is in a database.

Navigate a flat-file database to compare different views of information.

Choose which field to sort data by to answer a given question.

Explain that data can be grouped using chosen values.

Group information using a database.

Combine grouping and sorting to answer specific questions.

Choose which field and value are required to answer a given question.

Outline how 'AND' and 'OR' can be used to refine data selection.

Choose multiple criteria to answer a given question.

Select an appropriate chart to visually compare data.

Refine a chart by selecting a particular filter.

Explain the benefits of using a computer to create charts.

Ask questions that will need more than one field to answer.

Refine a search in a real-world context.

Present my findings to a group.

Creating media – Introduction to vector graphics

Recognise that vector drawings are made using shapes.

Experiment with the shape and line tools.

Discuss how vector drawings are different from paper-based drawings.

Identify the shapes used to make a vector drawing.

Explain that each element added to a vector drawing is an object.

Move, resize, and rotate objects I have duplicated.

Use the zoom tool to help me add detail to my drawings.

Explain how alignment grids and resize handles can be used to improve consistency.

Modify objects to create a new image.

Identify that each added object creates a new layer in the drawing.

Recognise keys on a keyboard.
Identify and find keys on a keyboard.
Enter text into a computer.
Use letter, number, and space keys.
Use backspace to remove text.
Type capital letters.
Explain what the keys that I have learnt about already do.
Identify the toolbar and use bold, italic, and underline.
Select a word by double-clicking.
Select all of the text by clicking and dragging.
Change the font.
Say what tool I used to change the text.
Decide if my changes have improved my writing.
Use 'undo' to remove changes.
Explain the differences between typing and writing.
Say why I prefer typing or writing.

Creating media – Digital photography

Recognise what devices can be used to take photographs.
Talk about how to take a photograph.
Explain what I did to capture a digital photo.
Explain the process of taking a good photograph.
Take photos in both landscape and portrait format.
Explain why a photo looks better in portrait or landscape format.
Identify what is wrong with a photograph.
Discuss how to take a good photograph.
Improve a photograph by retaking it.
Explore the effect that light has on a photo.
Experiment with different light sources.
Explain why a picture may be unclear.
Recognise that images can be changed.
Use a tool to achieve a desired effect.
Explain my choices.

Data and information – Pictograms

Record and organise data in a tally chart.
Represent a tally count as a total and compare.
Enter data onto a computer.
Use a computer to view data in a different format.
Use pictograms to answer simple questions about objects.
Use a tally chart to create a pictogram.
Explain what the pictogram shows.
Tally objects and create a pictogram using a common attribute.
Answer 'more than'/'less than' and 'most/least' questions about an attribute.
Choose a suitable attribute.
Create a pictogram and draw conclusions from it.

Creating media - Digital music

Connect images with sounds.
Use a computer to experiment with pitch.
Relate an idea to a piece of music.
Refine a musical pattern on a computer.

Identify the advantages and disadvantages of using text and images.
Change font style, size, and colours for a given purpose.
Edit text.
Explain that text can be changed to communicate more clearly.
Define the term 'page orientation'.
Recognise placeholders and say why they are important.
Create a template for a particular purpose.
Choose the best locations for my content.
Paste text and images to create a magazine cover.
Make changes to content after I've added it.
Identify different layouts.
Match a layout to a purpose.
Choose a suitable layout for a given purpose.
Identify the uses of desktop publishing in the real world.
Say why desktop publishing might be helpful.
Compare work made on desktop publishing to work created by hand.

Data and Information – Data Logging

Choose a data set to answer a given question.
Suggest questions that can be answered using a given data set.
Identify data that can be gathered over time.
Explain what data can be collected using sensors.
Use data from a sensor to answer a given question.
Identify that data from sensors can be recorded.
Recognise that a data logger collects data at given points.
Identify the intervals used to collect data.
Talk about the data that I have captured.
View data at different levels of detail.
Sort data to find information.
Explain that there are different ways to view data.
Propose a question that can be answered using logged data.
Plan how to collect data using a data logger.
Use a data logger to collect data.
Interpret data that has been collected using a data logger
Draw conclusions from the data that I have collected.
Explain the benefits of using a data logger.

Creating Media – Photo Editing

Improve an image by rotating it.
Explain why I might crop an image.
Use photo editing software to crop an image.
Explain that different colour effects make you think and feel different things.
Experiment with different colour effects.
Explain why I chose certain colour effects.
Add to the composition of an image by cloning.
Identify how a photo edit can be improved.
Remove parts of an image using cloning.
Experiment with tools to select and copy part of an image.
Use a range of tools to copy between images.
Explain why photos might be edited.
Describe the image I want to create.
Choose suitable images for my project.
Create a project that is a combination of other images.
Review images against a given criteria.
Use feedback to guide making changes.
Combine text and my image to complete the project.

Change the order of layers in a vector drawing.
Use layering to create an image.
Copy part of a drawing by duplicating several objects.
Recognise when I need to group and ungroup objects.
Reuse a group of objects to further develop my vector drawing.
Create a vector drawing for a specific purpose.
Reflect on the skills I have used and why I have used them.
Compare vector drawings to freehand paint drawings.

Creating media – Web page creation

Explore a website and discuss the different types of media used on it.
Know that websites are written in HTML.
Recognise the common features of a web page.
Suggest media to include on my page.
Draw a web page layout that suits my purpose.
Say why I should use copyright-free images.
Find copyright-free images.
Describe what is meant by the term 'fair use'.
Add content to my own web page.
Preview what my web page looks like.
Evaluate what my web page looks like on different devices and suggest/make edits.
Explain what a navigation path is and why they are useful.
Make multiple web pages and link them using hyperlinks.
Explain the implication of linking to content owned by others.
Create hyperlinks to link to other people's work.
Evaluate the user experience of a website.

Data and information - Introduction to Spreadsheets

Collect data.
Suggest how to structure my data.
Enter data into a spreadsheet.
Explain what an item of data is.
Choose an appropriate format for a cell.
Apply an appropriate format to a cell.
Explain which data types can be used in calculations.
Construct a formula in a spreadsheet.
Identify that changing inputs changes outputs.
Calculate data using different operations.
Create a formula which includes a range of cells.
Apply a formula to multiple cells by duplicating it.
Use a spreadsheet to answer questions.
Explain why data should be organised.
Apply a formula to calculate the data I need to answer questions.
Produce a chart.
Use a chart to show the answer to questions.
Suggest when to use a table or chart.

Creating media – 3D Modelling

Add 3D shapes to a project.
View 3D shapes from different perspectives.
Move 3D shapes relative to one another.
Resize an object in three dimensions.
Lift/lower and recolour 3D objects.
Rotate objects in three dimensions.
Duplicate and group 3D objects.
Accurately size 3D objects.

			Show that placeholders can create holes in 3D objects. Combine a number of 3D objects. Analyse a 3D model. Choose and combine objects to use in a 3D model. Construct a 3D model based on a design. Explain how my 3D model could be improved. Modify my 3D model to improve it.
Computer Progression – Computer Science: Theory			
	Computing systems and networks – Technology around us Explain technology as something that helps us. Locate examples of technology in the classroom. Explain how these technology examples help us. Identify examples of computers and IT and where they is found. **Computing systems and networks – IT around us** Describe some uses of computers and IT. Identify that a computer is a part of IT. Identify that some IT can be used in more than one way. Talk about uses of information technology. Demonstrate how IT devices work together	**Computer Systems & Networks** Explain that digital devices accept inputs. Explain that digital devices produce outputs. Classify input and output devices. Design a digital device. Describe a simple process. 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. Recognise different connections. Explain how messages are passed through multiple connections. Discuss why we need a network switch. Recognise that a computer network is made up of a number of devices. Demonstrate how information can be passed between devices. Explain the role of a switch, server, and wireless access point in a network. Identify how devices in a network are connected together. Identify networked devices around me. Identify the benefits of computer networks. **Computing systems and networks – The Internet** Describe the internet as a network of networks. Demonstrate how information is shared across the internet. 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 where websites are stored when uploaded to the WWW and how to access them. Explain the types of media that can be shared on the WWW. Explain what media can be found on websites. Recognise that I can add content to the WWW. Explain that internet services can be used to create content online. Explain that websites and their content are created by people. Suggest who owns the content on websites. Explain that there are rules to protect content.	**Computing systems and networks - Systems and searching** Explain that systems are built using a number of parts. Describe that a computer system features inputs, processes, and outputs. Explain that computer systems communicate with other devices. Identify tasks that are managed by computer systems. Identify the human elements of a computer system. Explain the benefits of a given computer system. Make use of a web search to find specific information. Refine my web search. Compare results from different search engines. 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. Order a list by rank. Explain that a search engine follows rules to rank results. Give examples of criteria used by search engines to rank results. Describe some of the ways that search results can be influenced. Recognise some of the limitations of search engines. Explain how search engines make money. **Computing systems and networks - Communication and collaboration** Recognise that data is transferred using agreed methods. Explain that internet devices have addresses. Describe how computers use addresses to access websites. Identify and explain the main parts of a data packet. Explain that data is transferred over networks in packets. Explain that all data transferred over the internet is in packets. Recognise how to access shared files stored online. Send information over the internet in different ways. Explain that the internet allows different media to be shared. Identify different ways of working together online. Recognise that working together on the internet can be public or private. Explain how the internet enables effective collaboration. Explain the different ways in which people communicate. Identify that there are a variety of ways to communicate over the internet. Choose methods of communication to suit particular purposes.
	Computing systems and networks – Technology around us Explain technology as something that helps us. Locate examples of technology in the classroom. Explain how these technology examples help us. Identify examples of computers and IT and where they is found. **Computing systems and networks – IT around us** Describe some uses of computers and IT. Identify that a computer is a part of IT.	**Computer Systems & Networks** Explain that digital devices accept inputs. Explain that digital devices produce outputs. Classify input and output devices. Design a digital device. Describe a simple process. 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.	**Computing systems and networks - Systems and searching** Explain that systems are built using a number of parts. Describe that a computer system features inputs, processes, and outputs. Explain that computer systems communicate with other devices. Identify tasks that are managed by computer systems. Identify the human elements of a computer system. Explain the benefits of a given computer system. Make use of a web search to find specific information. Refine my web search.

	Identify that some IT can be used in more than one way. Talk about uses of information technology. Demonstrate how IT devices work together	Recognise different connections. Explain how messages are passed through multiple connections. Discuss why we need a network switch. Recognise that a computer network is made up of a number of devices. Demonstrate how information can be passed between devices. Explain the role of a switch, server, and wireless access point in a network. Identify how devices in a network are connected together. Identify networked devices around me. Identify the benefits of computer networks. **Computing systems and networks – The Internet** Describe the internet as a network of networks. Demonstrate how information is shared across the internet. 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 where websites are stored when uploaded to the WWW and how to access them. Explain the types of media that can be shared on the WWW. Explain what media can be found on websites. Recognise that I can add content to the WWW. Explain that internet services can be used to create content online. Explain that websites and their content are created by people. Suggest who owns the content on websites. Explain that there are rules to protect content.	Compare results from different search engines. 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. Order a list by rank. Explain that a search engine follows rules to rank results. Give examples of criteria used by search engines to rank results. Describe some of the ways that search results can be influenced. Recognise some of the limitations of search engines. Explain how search engines make money. **Computing systems and networks - Communication and collaboration** Recognise that data is transferred using agreed methods. Explain that internet devices have addresses. Describe how computers use addresses to access websites. Identify and explain the main parts of a data packet. Explain that data is transferred over networks in packets. Explain that all data transferred over the internet is in packets. Recognise how to access shared files stored online. Send information over the internet in different ways. Explain that the internet allows different media to be shared. Identify different ways of working together online. Recognise that working together on the internet can be public or private. Explain how the internet enables effective collaboration. Explain the different ways in which people communicate. Identify that there are a variety of ways to communicate over the internet. Choose methods of communication to suit particular purposes.

Computer Progression – Computer Science: Programming / coding / problem solving

Computational Thinking Follow simple oral algorithms. Spot simple patterns. Sequence simple familiar tasks. **Coding and Programming** Use a mouse, touch screen or appropriate access device to target and select options on screen. Input a simple sequence of commands to control a digital device with support (Bee Bot).	**Programming A – Moving a robot** Predict the outcome of a command on a device. Match a command to an outcome. Run a command on a device. Follow an instruction. Recall words that can be acted out. Give directions. Compare forwards and backwards movements. Start a sequence from the same place. Predict the outcome of a sequence involving forwards and backwards commands. 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. Explain what my program should do. Choose the order of commands in a sequence. Debug my program. Identify several possible solutions. Plan two programs. Use two different programs to get to the same place. **Programming B - Programming animations** Find which commands to move a sprite. Use commands to move a sprite. Compare different programming tools. Use more than one block by joining them together. Use a Start block in a program.	**Programming A – Sequencing Sounds** Identify the objects in a Scratch project (sprites, backdrops). Explain that objects in Scratch have attributes (linked to). Recognise that commands in Scratch are represented as blocks. Identify that each sprite is controlled by the commands I choose. Create a program following a design. Choose a word which describes an on-screen action for my plan. Start a program in different ways. Create a sequence of connected commands. Explain that the objects in my project will respond exactly to the code. Explain what a sequence is. Combine sound commands. 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. Relate a task description to a design. Implement my algorithm as code. **Programming B – Events and Actions in programming** Explain the relationship between an event and an action. Choose which keys to use for actions and explain my choices. Identify a way to improve a program. Choose a character for my project.	**Programming A – Selection in physical computing** Create a simple circuit and connect it to a microcontroller. Program a microcontroller to make an LED switch on. Explain what an infinite loop does. Connect more than one output component to a microcontroller. Use a count-controlled loop to control outputs. Design sequences that use count-controlled loops. Explain that a condition is either true or false. Design a conditional loop. 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. Identify a real-world example of a condition starting an action. Describe what my project will do. Create a detailed drawing of my project. Write an algorithm that describes what my model will do. Use selection to produce an intended outcome. Test and debug my project. **Programming B – Selection in quizzes** Recall how conditions are used in selection. Identify conditions in a program. Modify a condition in a program. Use selection in an infinite loop to check a condition. Identify the condition and outcomes in an 'if… then… else...' statement.

Run my program.

Find blocks that have numbers.

Change the value.

Say what happens when I change a value.

Show that a project can include more than one sprite.

Delete a sprite.

Add blocks to each of my sprites.

Choose appropriate artwork for my project.

Decide how each sprite will move.

Create an algorithm for each sprite.

Use sprites that match my design.

Add programming blocks based on my algorithm.

Test the programs I have created.

Programming A – Robot algorithms

Follow instructions given by someone else and give clear instructions.

Choose a series of words that can be enacted as a sequence.

Use the same instructions to create different algorithms.

Use an algorithm to program a sequence on a floor robot.

Show the difference in outcomes between two sequences that consist of the same commands.

Follow a sequence.

Predict the outcome of a sequence.

Compare my prediction to the program outcome.

Explain and identify and test different routes around my mat.

Explain what my algorithm should achieve.

Create and an algorithm to meet my goal.

Test and debug each part of the program.

Plan algorithms for different parts of a task.

Put together the different parts of my program.

Programming B - Programming quizzes

Predict the outcome of a sequence of commands.

Match two sequences with the same outcome.

Change the outcome of a sequence of commands.

Work out the actions of a sprite in an algorithm.

Decide which blocks to use to meet the design.

Build the sequences of blocks I need.

Choose backgrounds for the design.

Choose characters for the design.

Create a program based on the new design.

Choose the images for my own design.

Create an algorithm.

Build sequences of blocks to match my design.

Compare my project to my design.

Improve my project by adding features.

Debug my program.

Choose a suitable size for a character in a maze.

Program movement.

Use a programming extension.

Consider the real world when making design choices.

Choose blocks to set up my program.

Identify additional features (from a given set of blocks).

Choose suitable keys to turn on additional features.

Build more sequences of commands to make my design work.

Test a program against a given design.

Match a piece of code to an outcome.

Modify a program using a design.

Make design choices and justify them.

Implement my design.

Evaluate my project.

Programming A – Repetition in shapes

Program a computer by typing commands.

Explain the effect of changing a value of a command.

Create a code snippet for a given purpose.

Use a template to create a design for my program.

Write an algorithm to produce a given outcome.

Test my algorithm in a text-based language.

Identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves.

Identify patterns in a sequence.

Use a count-controlled loop to produce a given outcome.

Identify the effect of changing the number of times a task is repeated.

Predict the outcome of a program containing a count-controlled loop.

Choose which values to change in a loop.

Identify 'chunks' of actions in the real world.

Use a procedure in a program.

Explain that a computer can repeatedly call a procedure.

Design a program that includes count-controlled loops.

Make use of my design to write a program.

Develop my program by debugging it.

Programming B – Repetition in games

List an everyday task as a set of instructions including repetition.

Predict the outcome of a snippet of code.

Modify a snippet of code to create a given outcome.

Modify loops to produce a given outcome.

Choose when to use a count-controlled and an infinite loop.

Recognise that some programming languages enable more than one process to be run at once.

Choose which action will be repeated for each object.

Explain what the outcome of the repeated action should be.

Evaluate the effectiveness of the repeated sequences used in my program.

Identify which parts of a loop can be changed.

Explain the effect of my changes.

Re-use existing code snippets on new sprites.

Evaluate the use of repetition in a project.

Select key parts of a given project to use in my own design.

Develop my own design explaining what my project will do.

Refine the algorithm in my design.

Build a program that follows my design.

Evaluate the steps I followed when building my project.

Create a program with different outcomes using selection.

Explain that program flow can branch according to a condition.

Design the flow of a program which contains 'if… then… else…'

Show that a condition can direct program flow in one of two ways.

Outline a given task.

Use a design format to outline my project.

Identify the outcome of user input in an algorithm.

Implement my algorithm to create the first section of my program.

Test and share my program.

Identify ways the program could be improved.

Identify the setup code I need in my program.

Extend my program further.

Programming A – Variables in games

Identify examples of information that is variable.

Explain that the way a variable changes can be defined.

Identify that variables can hold numbers or letters.

Identify a program variable as a placeholder in memory for a single value.

Explain that a variable has a name and a 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.

Create the artwork for my project.

Choose a name that identifies the role of a variable.

Test the code that I have written.

Identify ways that my game could be improved.

Use variables to extend my game.

Share my game with others.

Programming B - Sensing movement

Second Crumble project developed around primary STEM curriculum based around Computing and DT – to sort.

Computational Thinking Follow simple oral algorithms. Spot simple patterns. Sequence simple familiar tasks. **Coding and Programming** Use a mouse, touch screen or appropriate access device to target and select options on screen. Input a simple sequence of commands to control a digital device with support (Bee Bot).	**Programming A – Moving a robot** Predict the outcome of a command on a device. Match a command to an outcome. Run a command on a device. Follow an instruction. Recall words that can be acted out. Give directions. Compare forwards and backwards movements. Start a sequence from the same place. Predict the outcome of a sequence involving forwards and backwards commands. 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. Explain what my program should do. Choose the order of commands in a sequence. Debug my program. Identify several possible solutions. Plan two programs. Use two different programs to get to the same place. **Programming B - Programming animations** Find which commands to move a sprite. Use commands to move a sprite. Compare different programming tools. Use more than one block by joining them together. Use a Start block in a program. Run my program. Find blocks that have numbers. Change the value. Say what happens when I change a value. Show that a project can include more than one sprite. Delete a sprite. Add blocks to each of my sprites. Choose appropriate artwork for my project. Decide how each sprite will move. Create an algorithm for each sprite. Use sprites that match my design. Add programming blocks based on my algorithm. Test the programs I have created. **Programming A – Robot algorithms** Follow instructions given by someone else and give clear instructions. Choose a series of words that can be enacted as a sequence. Use the same instructions to create different algorithms. Use an algorithm to program a sequence on a floor robot. Show the difference in outcomes between two sequences that consist of the same commands. Follow a sequence. Predict the outcome of a sequence. Compare my prediction to the program outcome. Explain and identify and test different routes around my mat. Explain what my algorithm should achieve. Create and an algorithm to meet my goal. Test and debug each part of the program. Plan algorithms for different parts of a task.	**Programming A – Sequencing Sounds** Identify the objects in a Scratch project (sprites, backdrops). Explain that objects in Scratch have attributes (linked to). Recognise that commands in Scratch are represented as blocks. Identify that each sprite is controlled by the commands I choose. Create a program following a design. Choose a word which describes an on-screen action for my plan. Start a program in different ways. Create a sequence of connected commands. Explain that the objects in my project will respond exactly to the code. Explain what a sequence is. Combine sound commands. 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. Relate a task description to a design. Implement my algorithm as code. **Programming B – Events and Actions in programming** Explain the relationship between an event and an action. Choose which keys to use for actions and explain my choices. 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. Use a programming extension. Consider the real world when making design choices. Choose blocks to set up my program. Identify additional features (from a given set of blocks). Choose suitable keys to turn on additional features. Build more sequences of commands to make my design work. Test a program against a given design. Match a piece of code to an outcome. Modify a program using a design. Make design choices and justify them. Implement my design. Evaluate my project. **Programming A – Repetition in shapes** Program a computer by typing commands. Explain the effect of changing a value of a command. Create a code snippet for a given purpose. Use a template to create a design for my program. Write an algorithm to produce a given outcome. Test my algorithm in a text-based language. Identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves. Identify patterns in a sequence. Use a count-controlled loop to produce a given outcome. Identify the effect of changing the number of times a task is repeated. Predict the outcome of a program containing a count-controlled loop. Choose which values to change in a loop.	**Programming A – Selection in physical computing** Create a simple circuit and connect it to a microcontroller. Program a microcontroller to make an LED switch on. Explain what an infinite loop does. Connect more than one output component to a microcontroller. Use a count-controlled loop to control outputs. Design sequences that use count-controlled loops. Explain that a condition is either true or false. Design a conditional loop. 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. Identify a real-world example of a condition starting an action. Describe what my project will do. Create a detailed drawing of my project. Write an algorithm that describes what my model will do. Use selection to produce an intended outcome. Test and debug my project. **Programming B – Selection in quizzes** Recall how conditions are used in selection. Identify conditions in a program. Modify a condition in a program. Use selection in an infinite loop to check a condition. Identify the condition and outcomes in an 'if... then… else...' statement. Create a program with different outcomes using selection. Explain that program flow can branch according to a condition. Design the flow of a program which contains 'if… then… else…' Show that a condition can direct program flow in one of two ways. Outline a given task. Use a design format to outline my project. Identify the outcome of user input in an algorithm. Implement my algorithm to create the first section of my program. Test and share my program. Identify ways the program could be improved. Identify the setup code I need in my program. Extend my program further. **Programming A – Variables in games** Identify examples of information that is variable. Explain that the way a variable changes can be defined. Identify that variables can hold numbers or letters. Identify a program variable as a placeholder in memory for a single value. Explain that a variable has a name and a 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. Create the artwork for my project. Choose a name that identifies the role of a variable. Test the code that I have written.

Put together the different parts of my program. **Programming B - Programming quizzes** Predict the outcome of a sequence of commands. Match two sequences with the same outcome. Change the outcome of a sequence of commands. Work out the actions of a sprite in an algorithm. Decide which blocks to use to meet the design. Build the sequences of blocks I need. Choose backgrounds for the design. Choose characters for the design. Create a program based on the new design. Choose the images for my own design. Create an algorithm. Build sequences of blocks to match my design. Compare my project to my design. Improve my project by adding features. Debug my program.	Identify 'chunks' of actions in the real world. Use a procedure in a program. Explain that a computer can repeatedly call a procedure. Design a program that includes count-controlled loops. Make use of my design to write a program. Develop my program by debugging it. **Programming B – Repetition in games** List an everyday task as a set of instructions including repetition. Predict the outcome of a snippet of code. Modify a snippet of code to create a given outcome. Modify loops to produce a given outcome. Choose when to use a count-controlled and an infinite loop. Recognise that some programming languages enable more than one process to be run at once. Choose which action will be repeated for each object. Explain what the outcome of the repeated action should be. Evaluate the effectiveness of the repeated sequences used in my program. Identify which parts of a loop can be changed. Explain the effect of my changes. Re-use existing code snippets on new sprites. Evaluate the use of repetition in a project. Select key parts of a given project to use in my own design. Develop my own design explaining what my project will do. Refine the algorithm in my design. Build a program that follows my design. Evaluate the steps I followed when building my project.	Identify ways that my game could be improved. Use variables to extend my game. Share my game with others. **Programming B - Sensing movement** Second Crumble project developed around primary STEM curriculum based around Computing and DT – to sort.

Computer Progression – Digital Literacy (encompassing online safety and teaching pupils how to select the most appropriate digital content.

Cycle A

	EYFS		Year 1 and 2		Year 3 and 4		Year 5 and 6	
Autumn	**Pupil Acceptable Use Policy Session** **Self-image and identity** **JIGSAW Celebrating Difference Puzzle Piece 6** Standing up for yourself. Children are given the opportunity to practise the phrase, 'Please don't do that, I don't like it'; they are also reminded that if someone says that to them, they have to stop whatever they are doing to cause another child to say the phrase.		**Pupil Acceptable Use Policy Session** **Online bullying** **JIGSAW Celebrating Difference Puzzle Pieces 3 & 4** Children learn about what bullying is and how it might feel to be bullied; they also identify who they can talk to if they are unhappy or being bullied and can Identify that bullying is sometimes about difference allows children to understand more and to decide not to bully. Children are empowered to know what is right and wrong and to look after themselves. This whole Puzzle reinforces the messages about tolerance, difference and similarity, and how to be a better friend, and how to deal with bullying if it arises.				**Pupil Acceptable Use Policy Session**	
	Project Evolve **EYFS Copyright and Ownership** I can name my work and know it belongs to me.	**Project Evolve** **EYFS Self-image and Identity** I can recognise, online or offline, that anyone can say 'no' - 'please stop' - 'I'll tell' - 'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset. Smartie the Penguin	**Project Evolve** **Y2 Online Reputation** I can explain how information put online about someone can last for a long time.	**Project Evolve** **Y2 Copyright & Ownership** I can recognise that content on the internet may belong to other people.	**Project Evolve** **Y4 Online Reputation** I can describe how to find out information about others by searching online.	**Project Evolve** **Y4 Health, well-being & lifestyle** I can explain how using technology can be a distraction from other things, in both a positive and negative way.	**Project Evolve** **Y6 Health, well-being & lifestyle** I recognise and can discuss the pressures that technology can place on someone and how / when they could manage this.	**Project Evolve** **Y6 Online Relationships** I can describe how things shared privately online can have unintended consequences for others. e.g. screen-grabs.

	Spring	**Safety Internet Day** – whole school focus led by the Digital Leaders. Resources from the UK Safer Internet Centre. https://saferinternet.org.uk/ School motto: STOP, THINK, TELL	Online safety messages incorporated into computing lessons.	**Safety Internet Day** – whole school focus led by the Digital Leaders. Resources from the UK Safer Internet Centre. https://saferinternet.org.uk/ School motto: STOP, THINK, TELL		**Safety Internet Day** – whole school focus led by the Digital Leaders. Resources from the UK Safer Internet Centre. https://saferinternet.org.uk/ School motto: STOP, THINK, TELL		**Safety Internet Day** – whole school focus led by the Digital Leaders. Resources from the UK Safer Internet Centre. https://saferinternet.org.uk/ School motto: STOP, THINK, TELL	
		Project Evolve **EYFS Online Relationships** I can recognise some ways in which the internet can be used to communicate. Smartie the Penguin	**Project Evolve** **EYFS Managing Online Information** I can talk about how to use the internet as a way of finding information online. Using the Internet to research what seeds to plant in the spring. How to look after our sunflower seeds, use Google search engine and voice activated searching. **Project Evolve** **EYFS Online Reputation** I can identify ways I can put information on the Internet. **Project Evolve** **Y2 Online Bullying** I can describe ways that some people can be unkind online, who to turn to if I don't feel safe online, understand that people can be unkind online.	**Project Evolve** **Y2 Online Bullying** I can explain what bullying is, how people may bully others and how bullying can make someone feel.	**Project Evolve** Y2 Managing Online Information I can explain what voice activated searching is and how it might be used, and know it is not a real person (e.g. Alexa, Google Now, Siri).	**Project Evolve** **Y4 Online Bullying** I can recognise when someone is upset, hurt or angry online.	**Project Evolve** **Y4 Privacy and Security** I can explain that internet use is never fully private and is monitored, e.g. adult supervision.	**Project Evolve** **Y6 Online Bullying** I can explain how someone would report online bullying in different contexts.	**Project Evolve** **Y6 Copyright & Ownership** I can demonstrate how to make references to and acknowledge sources I have used from the internet.
	Summer	**Pupil Acceptable Use Policy Session** **Self-image and identity** **JIGSAW Celebrating Difference Puzzle Piece 6** Standing up for yourself. Children are given the opportunity to practise the phrase, 'Please don't do that, I don't like it'; they are also reminded that if someone says that to them, they have to stop whatever they are doing to cause another child to say the phrase.		**Online relationships / Managing online information / Privacy and security** **JIGSAW Relationships Puzzle Piece 4** **People who help us** If children find something unsuitable on a computer, or see/hear something that they feel uncomfortable about, practise with them who they can ask for help and what they can say. **JIGSAW Relationships Puzzle Piece 4** **People who help us** If children find something unsuitable on a computer, or see/hear something that they feel uncomfortable about, practise with them who they can ask for help and what they can say.		**Online reputation** **JIGSAW Relationships Puzzle Piece 3 – Keeping myself safe online** Children learn and rehearse using strategies for keeping themselves safe online; they also learn who to ask for help if they are worried or concerned about anything online. **Online bullying** **JIGSAW Relationships Puzzle Piece 3 – Keeping myself safe online** Children learn and rehearse using strategies for keeping themselves safe online; they also learn who to ask for help if they are worried or concerned about anything online.		**Online relationships** **JIGSAW Relationships Puzzle Pieces 2-6 (Online safety lessons)** In these lessons on staying safe when using technology, children learn to recognise and resist pressure to use technology in ways that may be risky or cause harm to others. Rights and responsibilities about being online, staying safe, and relationships with technology all make reference to online image and identity within these lessons. **Online reputation** **JIGSAW Relationships Puzzle Pieces 2-6 (General online safety lessons)** In these lessons on staying safe when using technology, children learn to recognise and resist pressure to use technology in ways that may be risky or cause harm to others. Rights and responsibilities about being online, staying safe, relationships with technology and online communities and gaming are discussed and learnt about in detail. **Online bullying** **JIGSAW Relationships Puzzle Piece 2 – Being in an online community** This lesson covers the rights and responsibilities of being online, and how an online community can help or hinder an individual. **Managing online information** **JIGSAW Relationships Puzzle Pieces 2-6 (General online safety lessons)** In these lessons on staying safe when using technology, children learn to recognise and resist pressure to use technology in ways that may be risky or cause harm to others. Rights and responsibilities about being online, staying safe, relationships with technology and online communities and gaming are discussed and learnt about in detail. **Health, well-being and lifestyle** **JIGSAW Relationships Puzzle Pieces 2-6 (General online safety lessons)** In these lessons on staying safe when using technology, children learn to recognise and resist pressure to use technology in ways that may be risky or cause harm to others. Rights and responsibilities about being online, staying safe, relationships with technology and online communities and gaming are discussed and learnt about in detail. Screen time is a focus of Piece 5, as children learn to recognise when they are spending too long on their devices – and to know how to help themselves. **Privacy and security** **JIGSAW Relationships Puzzle Piece 6 – Relationships and technology** Under the banner of keeping safe online, children learn about resisting pressure to use technology that could be risky or may cause harm to themselves or others. **Copyright and ownership** **JIGSAW Relationships Puzzle Pieces 2-6 (General online safety lessons)** In these lessons on staying safe when using technology, children learn to recognise and resist pressure to use technology in ways that may be risky or cause harm to others. Rights and responsibilities about being online, staying safe, relationships with technology and online communities and gaming are discussed and learnt about in detail. Piece 4 focuses on the gaming community, where children can learn about some legalities of the internet, including what age limits and use limits exist within some online communities.	

		Project Evolve **EYFS Privacy and Security** I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location) and how not to share it online. Smartie the Penguin.		**Project Evolve** Y2 Privacy and Security I can explain and give examples of what is meant by 'private' and 'keeping things private'.	**Project Evolve** **Y2 Health, well-being & lifestyle** I can explain simple guidance for using technology in different environments and settings e.g. accessing online technologies in public places and the home environment.	**Project Evolve** **Y4 Copyright & Ownership** When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it.	**Project Evolve** **Y4 Self-image and Identity** I can explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this.	**Project Evolve** **Y6 Managing Online Information** I understand the concept of persuasive design and how it can be used to influences peoples' choices.	**Project Evolve** **Y6 Online Reputation** I can explain the ways in which anyone can develop a positive online reputation.

Cycle B

		EYFS		**Year 1 and 2**		**Year 3 and 4**		**Year 5 and 6**	
	Autumn			**Pupil Acceptable Use Policy Session**		**Pupil Acceptable Use Policy Session**		**Online bullying** **JIGSAW Celebrating Difference Puzzle Piece 4 – Why bully?** Children are encouraged to practise and use a variety of strategies in managing their feelings in bullying scenarios – and how they can help solve problems if they are part of a bullying situation.	
				Project Evolve **Y1 Health, well-being & lifestyle** I can explain rules to keep myself safe when using technology both in and beyond the home.	**Project Evolve** **Y1 Online Relationships** I can give examples of when I should ask permission to do something online and explain why this is important.	**Project Evolve** **Y3 Self-image and Identity** I can explain what is meant by the term 'identity'.	**Project Evolve** **Y3 Online Relationships** I can explain what it means to 'know someone' online and why this might be different from knowing someone offline.	**Project Evolve** **Y5 Self-image and Identity** I can explain how identity online can be copied, modified or altered.	**Project Evolve** **Y5 Online Relationships** I can give examples of technology-specific forms of communication (e.g. emojis, memes and GIFs).
	Spring			**Safety Internet Day** – whole school focus led by the Digital Leaders. Resources from the UK Safer Internet Centre. https://saferinternet.org.uk/ School motto: STOP, THINK, TELL		**Safety Internet Day** – whole school focus led by the Digital Leaders. Resources from the UK Safer Internet Centre. https://saferinternet.org.uk/ School motto: STOP, THINK, TELL		**Safety Internet Day** – whole school focus led by the Digital Leaders. Resources from the UK Safer Internet Centre. https://saferinternet.org.uk/ School motto: STOP, THINK, TELL	
				Project Evolve **Y1 Online Bullying** I can describe how to behave online in ways that do not upset others and can give examples	**Project Evolve** **Y1 Self-image and Identity** If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help.	**Project Evolve** **Y3 Online Reputation** I can give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal.	**Project Evolve** **Y3 Online Bullying** I can describe appropriate ways to behave towards other people online and why this is important.	**Project Evolve** **Y5 Online Reputation** I can describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect.	**Project Evolve** **Y5 Managing Online Information** I can evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results.
	Summer			Online safety messages incorporated into computing lessons.		Online safety messages incorporated into computing lessons.		**Self-image and identity** **JIGSAW Relationships Puzzle Pieces 2-6 (Online safety lessons)** In these lessons on staying safe when using technology, children learn to recognise and resist pressure to use technology in ways that may be risky or cause harm to others. Rights and responsibilities are being online, staying safe, and relationships with technology all make reference to online image and identity within these lessons. **Online relationships** **JIGSAW Relationships Puzzle Pieces 5 & 6 (Online safety lessons)** Children learn to use technology positively and safely to communicate with friends and family, whilst taking responsibility for their own safety and well-being. Piece 6 focuses on the SMARRT rules and how to stay safe and happy online – and what to do if you don't feel safe. **Online reputation** **JIGSAW Relationships Puzzle Piece 6 – Using technology responsibly** This lesson offers the opportunity for children to learn to use technology positively and safely, so they can communicate respectfully. **Managing online information** **JIGSAW Relationships Puzzle Piece 5 – Being online: real or fake?** Safe or unsafe? This lesson helps children determine whether that they see online is safe and helpful – and whether it is true or fake. It also helps them to learn about resisting pressure online and becoming more discerning. The Jigsaw SMARRT rules are followed in this lesson, meaning that children have agency over their actions and know where to go for help if they need it. **Privacy and security** **JIGSAW Relationships Puzzle Piece 6 – Using technology responsibly** This lesson offers the opportunity for children to learn to use technology positively and safely, so they can communicate respectfully. It allows children the opportunity to take responsibility for their own safety and their wellbeing.	

				Project Evolve **Y1 Managing Online Information** I know / understand that we can encounter a range of things online including things we like and don't like as well as things which are real or make believe / a joke.	**Project Evolve** **Y1 Privacy and Security** I can explain how passwords are used to protect information, accounts and devices.	**Project Evolve** **Y3 Health, Wellbeing & Lifestyle** I can explain why spending too much time using technology can sometimes have a negative impact on anyone; I can give some examples of both positive and negative activities where it is easy to spend a lot of time engaged.	**Project Evolve** **Y3 Privacy and Security** I can give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult.	**Project Evolve** **Y5 Copyright and Ownership** I can assess and justify when it is acceptable to use the work of others.	**Project Evolve** **Y5 Online Bullying** I can recognise online bullying can be different to bullying in the physical world and can describe some of those differences.

Last audited: 1.2.2024 by EH