The **BIG** Picture

Exploring what a computer is by identifying and learning how inputs and outputs work. Understanding how computers are used in the wider world, children design their own computerised invention.

NC Objectives- Key Stage 1
Pupils should be taught:

- 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.

Unit Outcome

Pupils who are **secure** will be able to:

- Name some computer peripherals and their function.

- Recognise that buttons cause effects.

- Explain that technology follows instructions.

- Recognise different forms of technology.

- Design an invention which includes inputs and outputs.

- Explain the role of computers in the world around them.

Key vocabulary

Battery	Buttons
Camera	Computer
Desktop	Device
Digital	Digital recorder
Electricity	Function
Input	Invention
Keyboard	Laptop
Monitor	Mouse
Output	Paying till
Scanner	Screen
System	Tablet
Technology	Video
	Wires

Key Skills

- Understanding what a computer is and that it's made up of different components.

- Recognising that buttons cause effects and that technology follows instructions.

- Learning how we know that technology is doing what we want it to do via its output.

- Using greater control when taking photos with cameras, tablets or computers.

- Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.

- Using word processing software to type and reformat text.

- Creating and labelling images.

- Learning how computers are used in the wider world

Key Knowledge

- To know the difference between a desktop and laptop computer.

- To know that people control technology.

- To know some input devices that give a computer an instruction about what to do (output).

- To know that computers often work together.

The **BIG** Picture

Developing an understanding of what algorithms are, how to program them and how they can be developed to be more efficient through a range of unplugged and plugged-in activities.

NC Objectives- Key Stage 1
Pupils should be taught:

- 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
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Unit Outcome

Pupils who are **secure** will be able to:

- Decompose a game to predict the algorithms.

- Give a definition for 'decomposition'.

- Write clear and precise algorithms.

- Create algorithms to solve problems.

- Use loops in their algorithms to make their code more efficient.

- Explain what abstraction is.

Key vocabulary

Abstraction	Algorithm
Artificial intelligence	Bug
Clear	Correct
Data	Debug
Decompose	Error
Key features	Loop
Predict	Unnecessary

Key Skills

- Developing confidence with the keyboard and the basics of touch typing.

- Articulating what decomposition is.

- Decomposing a game to predict the algorithms used to create it.

- Learning that there are different levels of abstraction.

- Explaining what an algorithm is.

- Following an algorithm.

- Creating a clear and precise algorithm.

- Learning that programs execute by following precise instructions.

- Incorporating loops within algorithms.

- Using logical thinking to explore software, predicting, testing and explaining what it does.

- Using an algorithm to write a basic computer program.

- Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.

Key Knowledge

- To understand what machine learning is and how it enables computers to make predictions.

- To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times.

- To know that abstraction is the removing of unnecessary detail to help solve a problem.

The **BIG** Picture

Learning about word processing and how to stay safe online as well developing touch typing skills. Introducing important keyboard shortcuts, as well as simple editing tools within a word processor including: bold, italics, underline and font colour as well as how to import images.

NC Objectives- Key Stage 1
Pupils should be taught:

- 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.

Unit Outcome

Pupils who are **secure** will be able to:

- Explain which are the home row keys and how to find them for typing.

- Use the spacebar and backspace correctly.

- Type and make simple alterations to text using buttons on a word processor.

- Search for, import and alter appropriate images for a text document.

- Modify text in a document.

- Use copy and paste to copy text from one document to another.

- Explain what information is safe to be shared online.

Key vocabulary

Backspace	Bold	Navigate	Paste
		Redo	Search
Copy	Copyright	Space bar	Text
Cut	Delete	Text effects	Touch typing
		Underline	Undo
Forward button	Highlight	Word processing	
Home row	Home screen		
Image	Import		
Italics	Keyboard		
Keyboard character	Keyboard shortcut		
Keyword	Layout		

Key Skills

- Developing confidence with the keyboard and the basics of touch typing.

- Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.

- Using word processing software to type and reformat text.

- Searching for appropriate images to use in a document.

- Understanding what online information is.

- Identifying whether information is safe or unsafe to be shared online.

Key Knowledge

- To know that touch typing is the fastest way to type.

- To know that I can make text a different style, size and colour.

- To know that "copy and paste" is a quick way of duplicating text.

The **BIG** Picture

Exploring what 'blocks' do, using the app 'ScratchJr,' by carrying out an informative cycle of predict > test > review.
Programming a familiar story and an animation of an animal, children make their own musical instrument by creating buttons and recording sounds as well as following an algorithm to record a joke.

NC Objectives- Key Stage 1
Pupils should be taught:

*   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.

Unit Outcome

Pupils who are **secure** will be able to:

*   Explore a new application independently.
*   Explain what the blocks on ScratchJr do and use them for a purpose.
*   Recognise a loop in coding and why it is useful.
*   Use a code to create an animation of an animal moving.
*   Use code to follow *and* create an algorithm.
*   Program code to run 'on tap'.
*   Explain the role of the blocks in a program they have created.

Key vocabulary

Algorithm	Animation
Blocks	Bug
Button	CGI
Computer code	Code
Debug	Fluid
Icon	Imitate
Instructions	Loop
'On tap'	Programming
Repeat	ScratchJR
Sequence	Sound recording

Key Skills

*   Recognising that buttons cause effects and that technology follows instruction
*   Explaining what an algorithm is.
*   Following an algorithm.
*   Creating a clear and precise algorithm.
*   Learning that programs execute by following precise instructions.
*   Incorporating loops within algorithms.
*   Using logical thinking to explore software, predicting, testing and explaining what it does.
*   Using an algorithm to write a basic computer program.
*   Using loop blocks when programming to repeat an instruction more than once.
*   Using software (and unplugged means) to create story animations.

Key Knowledge

*   To know that coding is writing in a special language so that the computer understands what to do.
*   To understand that the character in ScratchJr is controlled by the programming blocks.
*   To know that you can write a program to create a musical instrument or tell a joke.

The **BIG** Picture

Storyboarding and simple animation creation using either tablet devices or devices with cameras.

NC Objectives- Key Stage 1
Pupils should be taught:

- 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.

Unit Outcome

Pupils who are **secure** will be able to:

- Create a flip book animation.

- Decompose a story into smaller parts to plan a stop motion animation.

- Create stop motion animations with small changes between images

Key vocabulary

Animation	Background
Decompose	Digital device
Drawing	Flipbook
Frames	Moving images
Object	Onion skinning
Plan	Still images

Key Skills

- Using greater control when taking photos with cameras, tablets or computers.

- Using logical thinking to explore software, predicting, testing and explaining what it does.

Key Knowledge

- To understand that an animation is made up of a sequence of photographs.

- To know that small changes in my frames will create a smoother looking animation.

- To understand what software creates simple animations and some of its features e.g. onion skinning.

The **BIG** Picture

Learning how astronauts survive on the ISS, including identifying necessary items, designing sensor displays, and exploring habitable planets. Children gain an understanding of living in space and how space exploration can benefit life on Earth.

NC Objectives- Key Stage 1
Pupils should be taught:

- 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
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- 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.

Unit Outcome

Pupils who are **secure** will be able to:

- Describe and explain how astronauts' survival needs are met aboard the ISS.

- Identify and digitally draw items which fulfil basic human needs when aboard the ISS.

- Read the correct temperature on a thermometer.

- Design a display showing everything that needs to be monitored by sensors on the ISS.

- Create an algorithm that addresses all plants' needs.

- Explain how space exploration can benefit life on Earth.

- Read data to identify whether a planet might be habitable.

Key Skills

- Developing confidence with the keyboard and the basics of touch typing.

- Creating and labelling images.

- Collecting and inputting data into a spreadsheet.

- Interpreting data from a spreadsheet.

- Learning how computers are used in the wider world.

Key vocabulary

Algorithm	Astronaut
Data	Digital
Digital content	Experiment
Galaxy	Insulation
Interactive map	International Space Centre
International Space Station	Interpret
Laboratory	Monitor
Planet	Satellite
Sensor	Space
Temperature	Thermometer
	Water reservoir

Key Knowledge

- To understand that you can enter simple data into a spreadsheet.

- To understand what steps you need to take to create an algorithm.

- To know what data to use to answer certain questions.

- To know that computers can be used to monitor supplies.

The **BIG** Picture

Learning about online safety, including: what happens to information posted online; how to keep things private online; who we should ask before sharing online; describing different ways to ask for, give, or deny permission online.

NC Objectives- Key Stage 1
Pupils should be taught:
- 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.

Unit Outcome

Pupils who are **secure** will be able to:

- Explain what is meant by online information.

- Recognise what information is safe to be shared online.

- Explain why we need passwords and what makes a strong password.

- Understand that they need to ask permission before sharing content online and explain why.

- Understand that they have the right to deny their permission to information about them being shared online.

- Say who they can ask for help with online worries.

- Use some strategies to work out if online information is reliable or not.

Key vocabulary

Accept	Comment
Consent	Content
Deny	Emojis
Offline	Online
Password	Permission
Personal information	Pop ups
Pressure	Private information
Reliable	Share
Terms and conditions	Trusted adult

Key Skills

- Identifying whether information is safe or unsafe to be shared online.

- Learning how to create a strong password.

- Learning to be respectful of others when sharing online and ask for their permission before sharing content.

- Learning strategies for checking if something they read online is true.

- Understanding how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable.

Key Knowledge

- To understand the difference between online and offline.

- To understand what information I should not post online.

- To know what the techniques are for creating a strong password.

- To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.'

- To understand that not everything I see or read online is true.