Three and four year olds	
Personal, Social and Emotional Development	• Remember rules without needing an adult to remind them. • Match their developing physical skills to tasks and activities in the setting.
Understanding the World	• Explore how things work
Reception	
Personal, Social and Emotional Development	• Show resilience and perseverance in the face of a challenge • Know and talk about different factors that support their overall health and well being: sensible amounts of screen time
Physical Development	• Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
Expressive Art and Design	• Explore, use and refine a variety of artistic effects to express their ideas and feelings.
ELG	
Personal, Social and Emotional Development – Managing Self	• Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. • Explain the reasons for rules, know right from wrong and try to behave accordingly.
Expressive Arts – Creating with Materials	• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Knowledge Progression in Computing

<table>
<tr><td>National Curriculum</td><td colspan="3">

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.

</td></tr>
<tr><td rowspan="2">Year 1</td><td>We are mappers

Know that a programmable toy can be controlled by inputting a sequence of instructions

Know how to develop and record sequences of instructions as an algorithm

Know how to debug their programs

Predict how their programs will work</td><td>Programming -ScratchJr

• I can find the commands to move a sprite
• I can use commands to move a sprite
• I can compare different programming tools
• I can use more than one block by joining them together
• I can use a Start block in a program
• I can run my program
• I can change the value
• I can delete a sprite
• I can add blocks to each of my sprites</td><td>We are painters

Know how to use the web safely to gather ideas for an illustration

Know how to create and change images on the computer

Know that ICT differs from using paint and paper

Know how to save, retrieve and change their work.

Reflect on their work and act on feedback received.</td></tr>
<tr><td>We are collectors

Know how to find and use pictures on the web

Know what to do if they encounter pictures that cause concern

Know how to group images on the basis of a binary (yes/no) question.

Know how to organise images into more than two groups according to clear rules

Know how to ask and answer binary (yes/no) questions about their images</td><td>Data

• Explain the key requirements of the task
• Explain how objects have been grouped
• Know that labels are used to identify a group with similar characteristics
• Group the same objects in more than one way
• Count how many objects are in group and identify which has more
• Record how many objects are in a group
• Group objects to answer a question
• Compare objects to group them explaining what has been found
Evaluate how successful they were in meeting the task requirements</td><td>We are celebrating

Know basic keyboard skills, through typing and text.
Know basic mouse skills.
Know how to use the web to find and select
Begin to know about storing and retrieving files
Begin to know about combining text and images
Discuss their work and think about whether it could be improved.</td></tr>
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<tr><td rowspan="2">Year 2</td><td>We are route planners

Know that algorithms are sequences of instructions
Know how to convert simple algorithms to programs
Understand how to predict what a simple program will do.
Know how to spot and fix (debug) errors in their programs</td><td>We are games testers

Know how to describe carefully what happens in computer games
Know how to use logical reasoning to make predictions of what a program will do.

• Know how to test these
Know how to think critically about computer games and their use
Know how to use games safely and in balance with other activities.</td><td>We are photographers

Consider the technical and artistic merits of photographs
Know how to use a digital camera or camera app.

Know how take digital photographs.

Know how to rate the images they take.
Know how to edit and enhance their photographs.
Know how to select their best images to include in a shared portfolio</td></tr>
<tr><td>Digital Music
• Plan and create a piece of music
• Reflect on a piece of music
• Follow a rhythm pattern
• Understand that a computer can generate different sounds
• Understand that a computer can be used to make a sequence of notes
• Understand how pattern and rhythm can be used to depict an animal
• Create and follow a rhythm pattern using two different instruments
• Use the computer to generate different sounds represented by images
• Create a sequence of notes on the computer and start to refine them
• Create a sequence of notes that use rhythm and tempo to link with a chosen animal, refining their work
• Evaluate how successful they were in meeting the task requirements</td><td>We are detectives

Know that that email can be used to communicate
Know how to open, compose and send emails.

Know how to open and listen to audio files on the computer
Know the appropriate language in emails
Know how to edit and format text in emails.

Be aware of online safety issues when using email</td><td>Data Pictograms

• I can record data in a tally chart
• I can represent a tally count as a total
• I can compare totals in a tally chart
• I can enter data onto a computer
• I can use a computer to view data in a different format
• I can use pictograms to answer simple questions about objects</td></tr>
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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
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<tr><td rowspan="2">Year 3</td><td>We are programmers

Know how to create an algorithm for an animated scene in the form of a storyboard.
Know how to write a program in Scratch to create the animation
Know how to correct mistakes in their animation programs

Know about a significant person in computing – Ada Lovelace</td><td>We are bug fixers

Begin to know a number of strategies for finding errors in programs

Build up resilience and strategies for problem solving.

Increase their knowledge and understanding of Scratch

Know a number of common types of bug in software</td><td>Desktop Publishing

Describe how different challenges require different solutions
Give an example of when using text, images or emojis online could be misinterpreted.
Choose an appropriate layout for a given scenario
Use placeholders appropriately to divide the page (magazine)
Add text and images
Format some of the text
Evaluate how successful they were in meeting the task requirements

</td></tr>
<tr><td>Stop Motion Animation

Explain the key requirements of the task
Storyboard has a clear beginning, middle, and end
Movement is smooth
The animation follows the storyboard
Make some improvements
Add some additional media
Evaluate how successful they were in meeting the task requirements

</td><td>We are communicators

Know basics of how email works.
Know how to use email.
Be aware of broader issues surrounding email, including netiquette’ and online safety.
Work collaboratively with a remote partner.

</td><td>Branching Databases

I can investigate questions with yes/no answers
I can make up a yes/no question about a collection of objects
I can create two groups of objects separated by one attribute
I can select an attribute to separate objects into groups
I can create a group of objects within an existing group
I can arrange objects into a tree structure

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<tr><td rowspan="2">Year 4</td><td>We are software developers
• Know how to develop an educational computer game using selection and repetition.
• Understand and use variables.
• Begin to know how to debug computer programs.
• Know what is user interface design, including consideration of input and output.</td><td>We are toy designers
• Know how to design and make an on-screen prototype of a computer-controlled toy.
• Know different forms of input and output (such as sensors, switches, motors, speakers).
• Know how to design, write and debug the control and monitoring program for their toy.</td><td>We are musicians
Know one or more programs to edit music.
Know how to create and develop a musical composition refining their ideas through reflection and discussion
Develop collaboration skills.
Begin to know how their composition can enhance work in other media.</td></tr>
<tr><td>The Internet
• I can describe the internet as a network of networks
• I can explain that the internet is used to provide many services
• I can describe where websites are stored when uploaded to the WWW
• I can explain that internet services can be used to create content online
• I can explain that websites and their content are created by people
• I can explain why some information I find online may not be honest, accurate, or legal</td><td>Photo Editing
• Explain the key requirements of the task
• Identify the types of image needed in relation to their chosen theme
• Outline how the images will be used together
• Suggest colours and effects that might suit their scene
• Select images and combine them into one
• Use a range of tools to create their image
• Add relevant text to their publication
• Evaluate how successful they were in meeting the task requirements</td><td>Data Logging
• Suggests questions that require data from at least one sensor to answer them
• Suggests questions that require data to be collected over time to answer them
• Identifies a suitable time frame to collect data to answer their question
• Identifies where the data logger needs to be placed to answer their question
• Identifies which sensor(s) needs to be used to answer their question
• Uses software to view relevant data
• Recognises how some data points are different
• Makes statements about what their data shows
• Uses their collected data to answer their question</td></tr>
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National Curriculum

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use sequence, selection, and repetition in programs; work with variables and various forms of input and output

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Year 5

We are game developers

- Know how to create original artwork and sound for a game.
- Know how to design and create a computer program, which uses sequence, selection, repetition and variables.
- Know how to detect and correct errors in their computer game.
- Know how to make and test a series of small changes to improve their game.
- Know about an important person in computing – Sophie Wilson

Flat-file databases

- I can create a database using cards
- I can navigate a flat-file database to compare different views of information
- I can group information using a database
- I can outline how 'AND' and 'OR' can be used to refine data selection
- I can refine a chart by selecting a particular filter
- I can refine a search in a real-world context

We are cryptographers

- Know semaphore and Morse code.
- Know the need for private information to be encrypted.
- Know how to encrypt and decrypt messages in simple ciphers.
- Know why we use complex passwords and to keep them secure.
- Begin to know some understanding of how encryption works on the web.

Video Production

- Explain the key requirements of the task
- Show sequence and progression with a clear beginning, middle, and end
- Use appropriate filming techniques and capture the scenes from the storyboard
- Captured audio is clear
- Edit the video to join scenes, matching the storyboard
- Evaluate how successful they were in meeting the task requirements

Introduction to Vector Graphics

- Explain the key requirements of the task
- Choose an item in the classroom and consider how it's relevant to the task
- Add and remove objects to create a drawing of a chosen artefact
- Use copy and paste to maintain consistency within the drawing
- Manipulate an object's size, colour, and proportion to represent a chosen artefact
- Purposefully position and rotate objects
- Move objects to different layers to create a specific aspect of a drawing
- Manipulate multiple objects concurrently
- Group objects to make them easier to work with
- Evaluate how successful they were in meeting the task requirements

We are architects

- Know the work of architects, designers and engineers working in 3D
- Begin to know how to use a simple CAD computer aided design) tool.
- Develop spatial awareness by exploring and experimenting with a 3D virtual environment.
- Develop greater aesthetic awareness.

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<tr><td rowspan="2">Year 6</td><td>We are toy makers

Know how computers use stored programs to connect input to output
Know how to generate and evaluate designs in response to a brief
Know how to plan a complex project by decomposing it into smaller parts
Know how to design and write a program for an embedded system
Know about an important person in computing – Alan Turing

Introduction to spreadsheets

I can suggest how to structure my data
I can choose an appropriate format for a cell
I can construct a formula in a spreadsheet
I can apply a formula to multiple cells by duplicating it
I can use a spreadsheet to answer questions
I can use a chart to show the answer to a question

</td><td>Variables in Games

I can explain that the way a variable change can be defined
I can explain that a variable has a name and a value
I can decide where in a program to change a variable
I can create algorithms for my project
I can test the code that I have written
I can use variables to extend my game

We are advertisers

Know about an important person in computing – Banu Musa
Know about intellectual property rights
Know how to edit the assembled content to make an effective advert.
Know how to storyboard a film including different types of shot.

</td><td>We are publishers
Begin to know key marketing messages, including identifying a unique selling point.
Know how to produce a printed brochure incorporating text and images.
Know how to document their design decisions and the process they've followed.
Know how to work collaboratively.

We are AI developers

Know how decision trees can be trained automatically to classify data.
Know how speech recognition works.
Know how a neural net recognises images.
Know how to train a machine learning system to identify sentiments.
Know some ethical principles in designing AI systems.

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</table>