Knowledge Progression

Year 2 Computing

	Computational Thinking	Computers & Hardware	Digital Literacy & eSafety
Key Vocabulary	Scratch JR, Coding, Instructions, Icon, Sound recording, Icon, Button, 'On tap', Decomposition, Data, Artificial intelligence, Loops, Abstraction, Bugs, Debugging, Errors, Correcting, Robot, Animate, Loop, Imitate, Algorithm, Code, Sequence.	Battery, Buttons, Computer, Desktop, Device, Electricity, Input, Invention, Output, Keyboard, Laptop, Monitor, Mouse, Technology, Wires, Robot, Stop- motion, Animation, Contraption, Video, Photo, Animator, import image, Software, Upload, Download, Device, Camera, Onion skinning, Scanner, Till, Flip book, Still/moving images.	Keyboard character, Space bar, Word processing, Touch typing, Delete, Backspace, Bold, Italic, Text, Import, Image, Layout, Text effects, Copy, Paste, Cut, Copyright, Author, Space, International Space Station (ISS), International Space Centre, Survival, Digital content, Interactive map, Satellite, Essential, Survival, Digital, Leisure, Astronaut, Transporting, Approximately, Dehydrated, Rehydrated, Multiple, Sensor, Undo, Redo, Bold, Italics, Underline, Ctrl Z, Ctrl A, Ctrl Y, Ctrl B, Ctrl I, Ctrl U.
Previous knowledge/ Learning	**In Year 1, our pupils learnt to:** *C1* - Tinker with technology by: ➢ Thinking about what it might do first ('predicting'). ➢ Trying it out ('exploring'). ➢ Seeing if they were right ('explaining'). ➢ Can fix errors (debug it) and explain the problem it caused. *C2* - Use programming to give clear instructions. ➢ Debug instructions and directions if they go wrong by identifying and correcting the mistake. ➢ Explain that an algorithm is a clear set of instructions to carry out a task. ➢ Know that these instructions need to be carried out in a specific order. ➢ Know that algorithms are used by computers to help them carry out tasks correctly. ➢ Show how there can be more than one solution to solve a problem. *C3* - Explain that decomposition is where you break a problem into smaller manageable chunks. *C4* - Know that sequencing is important (rocket designs) in Computing.	**In Year 1, our pupils learnt to:** *C5* - Recognise what we mean by a computer. ➢ Navigate a computer using a mouse. ➢ Type using a keyboard and understand what we mean by drag, drop and click (left/right). *C6* - Identify input and output devices and recognise that some can be both. *C7* - Use a variety of different digital painting tools to create different effects. ➢ Use different tools such as: brush, stamp, fill, clip art, undo, duplicate and outline, tools to create a desired effect. ➢ Check their surroundings for good conditions (light, stability etc.). ➢ Crop, bring to front, resize and add a colour filter to photos. :	**In Year 1, our pupils learnt to:** *C8* - Log in and log out of an account on school computers. ➢ Know images can be found online. ➢ Think of keywords that reflect a key part of the image that is being searched for. ➢ Identify different types of digital content (words and pictures) ➢ Know how to download images by using 'right click; save as' or dragging to desktop. ➢ Create a digital image using a graphics editor. ➢ Save digital images to the correct folder. *C9* - Know what to do if they find something uncomfortable. *C10* - Represent data in different ways. ➢ Answer questions about data. ➢ Create a branching database. ➢ Explain how a list made on a computer can be saved and shared more easily. ➢ Can open a spreadsheet and input data into cells.
N.C. Objectives	➢ 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.	➢ 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 ➢ Use technology purposefully to source and manipulate digital content.
Resources / Websites	Laptops or desktop computers Optional: a copy of 'The Gingerbread Man' Scratch Jr. Optional: camera/recording device	Post-it notes in a variety of colours Clipboards Laptops 10 mini whiteboards Tablets or digital cameras	Cones or floor markers Lego or building blocks Mini figures Laptops or tablets Optional: old technology

Cycle 1:	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Kapow:	What is a Computer	Word Processing	Programming: Scratch Jr.	International Space Station	Stop Motion	Algorithms and Debugging

Powerful Knowledge

Year 2 Computing

Key Knowledge – what do we want our children to know before they leave our phase? How will we get them there? How is that personalised to Tranmere?

Computational Thinking

POWERFUL KNOWLEDGE:

Our children will:

C1 - Know that people control technology; know that technology follows instructions and can predict what technology will do.

C2 - Know how to use a coding application such as Scratch Jr. and can use the programming blocks for a set purpose.

C3 - Recognise a loop in programming and can program code to run 'on tap'.

C4 - Choose the code to match an algorithm and can use an algorithm to write a computer program.

C5 - Use 'sound' blocks to create a musical instrument, selecting the microphone option to record sounds - designing their instrument outline - and the buttons to make it play.

C6 - Decompose a game to predict the algorithms that are used.

C7 - Explain what abstraction is and give an example of when abstraction might be useful.

C8 - Understand the meaning of the word 'debugging' using a Lego building lesson.

HOW DOES THIS LOOK AT TRANMERE?

1. Children label a robot which has been programmed for a specific purpose, focusing on which forms of input it requires and the outputs we will see. Robots are then physically constructed with debugging skills being put to the test to overcome any problems.
2. Tinkering with ScratchJr independently, children build a program by dragging 'blocks' then running their code, learning that each block has a different attribute.
3. Using the blue 'movement' blocks in ScratchJr., children work as a class to realistically animate the movement of a fly, using a loop, learning that giving the computer two instructions makes for a more natural movement, before moving on to programming their own animals.
4. Children play an unplugged version of a dinosaur themed game where they must carefully follow instructions to teach them about the importance of order in algorithms and debugging.
5. By creating a simplified view of part of the school, children develop their understanding of abstraction.
6. Children follow an algorithm to programme a joke, designing a background, relevant characters and the green sound blocks to record voices.
7. Building on the skills learnt in the joke lesson, children progress to programming a story of the Three Little Pigs.

Computers & Hardware

POWERFUL KNOWLEDGE:

Our children will:

C9 - Can name the key parts of a computer.

- Explain that a keyboard contains lots of buttons.
- Explain the purpose of different computer parts.

C10 - Use inputs and outputs for devices such as robots.

C11 - Explain what computers are used for (shops) and that computers work together.

C12 - Understand and can explain what 'stop motion' means and create frames and backgrounds using flip books for inspiration.

C13 - Understand the importance of keeping the camera still and making small movements between shots, whilst undertaking a tech safari.

HOW DOES THIS LOOK AT TRANMERE?

1. Children go on a Technology Safari around the school, investigating and photographing the different types of technology they spot.
2. Children design their own inventions such as a cupcake machine or a shrink machine which must include inputs and outputs, explaining how their idea works and how it's controlled.
3. Children explain the different types of computers that are used in the real world and the roles that they play by role-playing a shopping trip using technology such as self-scan and scan as you go (possible visit link).
4. Children explore what is meant by Stop Motion and create their own simple space-themed animations with a ball of plasticine.
5. Children take the first few shots of their film, making small movements between frames and following their story boards.

Digital Literacy & eSafety

POWERFUL KNOWLEDGE:

Our children will:

C14 - Can type a sentence into a word processor.

- Select all of the text and make it bold or italic.
- Find specific keys and shortcuts on a computer keyboard (Ctrl A, Y, C, V, Z, X).
- Begin to touch type using F and J keys to set their hands in the correct position.
- Identify the home keys on a computer.
- Understand how to type capital letters using 'shift'.
- Import and alter an image in a document.
- Understand how to use text styles to create headings and subtitles.
- Can copy and paste text into a document, understanding the importance of crediting source materials.

C15 - Understand the importance of not sharing personal information and know what to do if something they have seen or heard online makes them feel upset or uncomfortable.

C16 - Use mouse and keyboard skills to draw and add text to a project and consider how computers would monitor items on the ISS.

C17 - Interpret data with real-life application.

HOW DOES THIS LOOK AT TRANMERE?

1. Children learn how to touch type using websites such as Typing Club Jungle Junior to assist with hand and finger placement.
2. Children learn about word processing and storing information in a text document as well as keyboard shortcuts by becoming newspaper writers (wrapping text, bold, italics, Ctrl A, Y, C, V, Z, X).
3. By searching on the internet, children learn how to copy and paste text (making use of Ctrl A, V, C) to create a poetry book and understand the importance of referencing copied work.
4. After learning more about being safe online, children create digital posters based around a video from ThinkUKnow.
5. Children develop their mouse and keyboard skills creating digital drawings of basic items that astronauts would need in space, learning about the survival needs of humans.
6. Using their understanding of what's required to support human life, children explore a range of both real and fictitious planets, interpreting data to decide whether they might be habitable.