



Knowledge Progression

Year 3 Computing



	Computational Thinking TERM:	Computers & Hardware TERM:	Digital Literacy & eSafety TERM:
Key Vocabulary	Animation, Application, Code, Coding block, Debug, Decompose, Interface, Predict, Loop, Program, Remixing code, Repetition code, Review, Sprite, Tinker, Algorithm, Review, Infinite loop	Device, DSL, File, Internet, Network, Network map, Network switch, Router, Server, Submarine cables, The Cloud, WiFi, Wired, Wireless, Wireless access point, Computer, Computer program, CPU, Data, Desktop, GPU, Hard disk drive (HDD), Instructions, QR Code, RAM, ROM, Tablet, Trackpad, Digital device, Laptop, Input, Output, World wide web, Packets, Storage, Connect, File, Router, Photocopier.	Account, Attachment, BCC, CC, Cyberbully, Cyberbullying, Domain, Email, Email account, Emoji, Information, Log off, Log on, Password, Spam, Username, Edit, Film, Film editing software, Graphics, Import, Key events, Recording, Sound effects, Time code, Voiceover, Categorise, Data, Database, Fields, Filter, Graphs/Charts, Information, Sort, Spreadsheet, Storyboard, Storyline, Hacker, Scammer, Genuine/Fake, Mark as spam, Responsible digital citizens, Sign in, Email address, Settings, Inbox, Composing, Theme, Subject bars, Reply.
Previous knowledge/ Learning	<p>In Year 2, our pupils learnt to:</p> <p>C1 - Know that people control technology; know that technology follows instructions and can predict what technology will do.</p> <p>C2 - Know how to use a coding application such as Scratch Jr. and can use the programming blocks for a set purpose.</p> <p>C3 - Recognise a loop in programming and can program code to run 'on tap'.</p> <p>C4 - Choose the code to match an algorithm and can use an algorithm to write a computer program.</p> <p>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.</p> <p>C6 - Decompose a game to predict the algorithms that are used.</p> <p>C7 - Explain what abstraction is and give an example of when abstraction might be useful.</p> <p>C8 - Understand the meaning of the word 'debugging' using a Lego building lesson.</p>	<p>In Year 2, our pupils learnt to:</p> <p>C9 - Can name the key parts of a computer.</p> <ul style="list-style-type: none"> ➤ Explain that a keyboard contains lots of buttons. ➤ Explain the purpose of different computer parts. <p>C10 - Use inputs and outputs for devices such as robots.</p> <p>C11 - Explain what computers are used for (shops) and that computers work together.</p> <p>C12 - Understand and can explain what 'stop motion' means and create frames and backgrounds using flip books for inspiration.</p> <p>C13 - Understand the importance of keeping the camera still and making small movements between shots, whilst undertaking a tech safari.</p>	<p>In Year 2, our pupils learnt to:</p> <p>C14 - Can type a sentence into a word processor.</p> <ul style="list-style-type: none"> ➤ 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. <p>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.</p> <p>C16 - Use mouse and keyboard skills to draw and add text to a project and consider how computers would monitor items on the ISS.</p> <p>C17 - Interpret data with real-life application.</p>
N.C. Objectives	<ul style="list-style-type: none"> ➤ 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. 	<ul style="list-style-type: none"> ➤ 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. 	<ul style="list-style-type: none"> ➤ 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.
Resources / Websites	Large paper Tablet or device with QR code scanner installed Optional: Tablet with PicCollage installed Scratch Laptops or desktop computers with internet connection	Laptops or desktop computers Plain paper Pencil cases/colouring pens Desktop computers Felt-tip pens	Laptops or desktop computers Clipboards Tablets or digital cameras Counters

Cycle 1:	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Kapow:	Networks and Internet	Emailing	Programming: Scratch	Journey Inside a Computer	Digital Literacy (including iPads)	Top Trumps Databases



Powerful Knowledge

Year 3 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** - Incorporate loops to make code more efficient and ‘remix’ existing code.
- C2** - Use logical reasoning to explain how simple algorithms work.
- C3** - Explain the purpose of an algorithm and form algorithms independently.
- C4** - Use decomposition to explore the code behind an animation.
- C5** - Use a systematic approach to debugging code, justifying what is wrong and how it can be corrected.

HOW DOES THIS LOOK AT TRANMERE?

1. Children create musical instruments using the sound blocks or real musical notes using loops to create the repetition found in most pieces of music (e.g. London’s Burning).
2. Children remix an animation and make it their own by altering a program’s code, following a set of challenges (remixing code around the first monkey in space: Albert II).
3. Children consider the plot in animation storytelling, then remix it to complete the story by creating a beginning, middle and end, and adding speech.
4. Children explore the action and algorithm behind a game, Robot Bop, representing the code on paper before programming it into Scratch to replicate the original.
5. Children debug any errors in their animation code.

Computers & Hardware

POWERFUL KNOWLEDGE:

Our children will:

- C6** - Understand that computers respond to inputs and outputs.
- C7** - Understand what the different components of a computer do, using decomposition to describe the parts of a laptop computer and a tablet.
- C8** - Understand what a server does and what a network is, and their purpose.
- C9** - Identify the components within a network including whether they are wired or wireless.
- C10** - Recognise links between networks and the internet and learn how data is transferred in small ‘packets’ of information.

HOW DOES THIS LOOK AT TRANMERE?

1. The children will create a poster, using Canva, to explain inputs and outputs, linking it to packets of information.
2. Children build a paper laptop, describing the purpose of the hard drive, RAM, keyboard, CPU, ROM, GPU, mouse). They also observe the dismantling of a tablet before drawing a diagram with all its component parts.
3. Children draw a map of how we are able to share images and information from a website.
4. Children learn about routers and how they are involved in accessing a website by creating a map of the journey of a YouTube video.
5. By creating an animation of a file’s journey, children learn how information is shared between two devices on a network.
6. Children go on a network safari around school identifying key components (server, routers, cables, switch).

Digital Literacy & eSafety

POWERFUL KNOWLEDGE:

Our children will:

- C11** - Understand how to use CC and BCC and attach files to an email.
- C12** - Understand the vocabulary associated with databases: field, record, data, knowing the differences between paper and digital databases
- C13** - Sort and filter databases to retrieve information as well as creating and interpreting graphs and charts using data.
- C14** - Take photographs and record video to tell a story and use voiceovers, text, music, sound effects to edit and enhance videos and photographs.
- C15** - Log in and out of an email account and write and reply to an email including a subject, ‘to’ and ‘from’. They are responsible digital citizens and treat each other respectfully, recognising when digital behaviour is unkind understanding what cyberbullying is and recognise that some online and digital content is fake.

HOW DOES THIS LOOK AT TRANMERE?

1. Children use ‘Top Trumps’ cards to help their understanding of records, fields and data when working with databases.
2. Children sort and filter data to plan a holiday.
3. Children create and edit book trailers using iMovie, developing their understanding of the effects (voiceovers, text, sounds effects and music) that can be applied.
4. Children send emails to each other (BCC and CC) using their school accounts, attaching files and understanding polite etiquette.
5. Children know how to recognise cyberbullying/fake emails by identifying unkind/unexpected language.