# Computing at Thornton Primary School

Intent

Computing teaching at Thornton Primary School will provide pupils with rich, deep learning experiences that balance all the aspects of computing. With technology playing such a significant role in society today, we believe 'Computational thinking' is a skill children must be taught if they are to be able to participate effectively and safely in this digital world.

We teach a curriculum that enables children to become effective users of technology who can:
- Use a wide range of technology, including laptops, iPads and interactive whiteboards, allowing them to continually practise and improve the skills they learn.
- Understand and apply the essential principles and concepts of Computer Science, including logic, algorithms and data representation.
- Analyse problems in computational terms and have repeated practical experience of writing computer programs in order to solve such problems.
- Evaluate and apply information technology analytically to solve problems.
- Communicate ideas well by utilising appliances and devices throughout other areas of the curriculum.
- Develop into active participants in a digital world.
- Become digitally literate and express themselves.
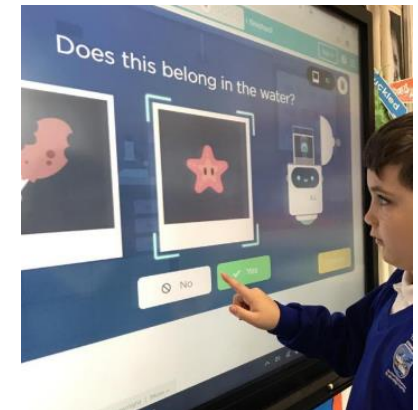
At Thornton, our teaching is based on the National Curriculum for Computing.
The national curriculum for computing aims to ensure that all pupils:
- Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- 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.

Implementation

Our curriculum design is based on evidence from principles of learning, on-going assessment and organisation and cognitive research (EEF research, Cognitive Science, Psychological Science).
These main principles underpin this:
• 'Start from a learner's existing understanding.
• Involve the learner actively in the learning process.
• Develop the learner's overview, i.e. metacognition – this requires that students have a view of purpose, have an understanding of the criteria of quality of achievement and self-assess (EEF Metacognition and Self-regulation of learning).
• Emphasis the social aspects of learning (i.e. learning through discussion) as these make a unique contribution to learning (EEF research Collaborative Learning).

Computing skills, knowledge and understanding will be taught through topics and also covered cross curricular through other subject areas. There is a strong emphasis on progression of knowledge and developing pupils' skills. By the end of each Key Stage, pupils will know, be able to apply and understand the matters, skills and processes specified in the programmes of study in the National Curriculum.

On occasion, topic headings may occur on a rotation depending of class sizes/organisation of year groups. This is carefully tracked by subject leaders to ensure topic content is not repeated, the progression of key knowledge and skills is still maintained and also that content is differentiated for different age groups when necessary. We use the iCompute scheme and resources to support the teaching of computing for years 1-6.

Topic Map

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Online Safety	**iSafe** Sharing personal information (stranger danger)	**iSafe** Introduction to staying safe online (passwords, who to contact if you're unhappy online	**iSafe** Recognise when something does not feel right Identify risks with sharing information online How to protect against online worries	**iSafe** Social media How to make a secure password How to understand the ways that the internet can make people feel about themselves Cyber bullying Online safety when communicating with others Identity theft	**iSafe** Fake news and not believing that all that we read online is the truth How to stay safe when gaming online	**iSafe** Information posted online is there forever Social media and keeping safe Social media ages and children's social media apps Customising privacy settings including handheld screen lock devices Heat of the moment messages versus waiting to speak face to face and the problems this could entail
Programming algorithms and animating	**iAlgorithm** (before iProgram) Algorithms-Computing unplugged (using verbal instructions) **iProgram** Following algorithms using virtual toys	**iAnimate** (Before program) Introduction to animation by making written storyboards (props, characters) **iProgram** Write a simple program which produces an output (write a series of instructions to follow including quarter turns) Use language such as forward, back, left and right Begin to debug and fix	**iProgram** Games and animation development **iAlgorithm** Debugging and solving problems with an algorithm which is not working Computers work by following instructions	**iAnimate** Animation using a device Make an animation using stop motion animation apps and programs Taking storyboards which have been drawn and making it come to life using a device **iProgram** Computers work by following instructions After you have recognised there is a problem (debugging) learning to split it up into manageable chunks to solve Navigating mazes and making shapes	**iProgram** Designing and developing computer games (including Scratch and conditional 'if' statements) Moves on from navigating mazes	

Keyboard skills and word processing	**iWrite** Creating and manipulating digital texts (typing simple sentences)	**iBlog and iMail** Understand what a blog is and how to post and respond as a class Introduction to email and write class email-know that messages can be sent electronically	**Presentation skills** Using PowerPoint to make slides	**Presentation skills** Considering audience using PowerPoint-PowerPoint style Inserting sound clips Inserting images Transitions and animations	**Presentation skills** Using Excel and spreadsheets	
Year group specific	**iData** Representing data (pictograms)	**iSearch** Using a search engine Know that the internet can be used to locate information	**iSimulate** Exploring computer simulations Understand that these can represent real and imagined situations Design and produce an adventure game using Scratch with changing variables Basic introduction to Scratch	**iConnect** Knowing that the internet is many computers that are connected and to understand some of the services available Using hyperlinks to move around the web Basis navigation skills to browse-moving on from locating information Knowing basic steps to distinguish safe and credible websites	**iCrypto** Sending messages which are safe Understand that data can be transmitted as binary Decode Morse code Enigma machine and how this operates Historical importance of cryptography **iWeb** Property rights/copyright and plagiarism Remixing and creating web content using HTML (website design)	**Film making** iMovie (Apple app) Make a film trailer
Keyboard skills and word processing	**iModel** An introduction to computers (logging on and typing names and simple sentences)	**Word processing** Producing a fact file	**Word processing** Text box Changing the text font and style/colour Short cuts (CTRL key)	**Word processing** Inserting a table Changing and considering page layout Spell check Using hyperlinks	**Word processing** Using hyperlinks Touch typing and typing at speed	**iNetwork** Using OneDrive Saving and editing on OneDrive Google Classroom

Impact

The impact of our curriculum is measured in terms of the extent to which pupils have developed new knowledge, understanding and skills and that they can use and recall this with fluency.

This will be measured by:

- In school attainment tracking of both core and foundation subjects
- Engagement in enrichment activities
- Route to Resilience activities
- Pupil voice – questionnaires (including Y6 online safety questionnaire), pupil book and learning reviews
- Subject Leader monitoring – Lesson visits, scrutiny of books, assessment, pupil interviews and questionnaires
- Governor monitoring