Subject Key Specification Policy

Computing

Written by: Mrs. A Hurst and Miss Woodward
Date: September 2024
Review Date: Autumn Term 2025

Contents

Rationale

Trust Level

This document was created in conjunction with Computing subject leads across the primary arm of the Rowan Learning Trust (RLT). Through this collaborative approach, 'Stage Descriptors' were identified and agreed upon on a trust level. These descriptors provide a list of objectives which each school uses as their baseline/non-negotiable objectives, providing a moderated approach to the content delivered in Computing lessons across the RLT. Computing leads across the Trust worked together to ensure that these Stage Descriptors met the National Curriculum Aims and Objectives.

School Level

Using these Stage Descriptors, each school within the RLT has personalised their curriculum to suit their context and individual needs. Here at Marus Bridge Primary School, the Stage Descriptors act as a baseline to our 'End Points Document', which lists each objective to be taught within each individual topic. Topics and End Points have been selected with a great deal of purpose to reflect the intent of our curriculum at Marus Bridge and ensure that knowledge is sequential and interconnected.

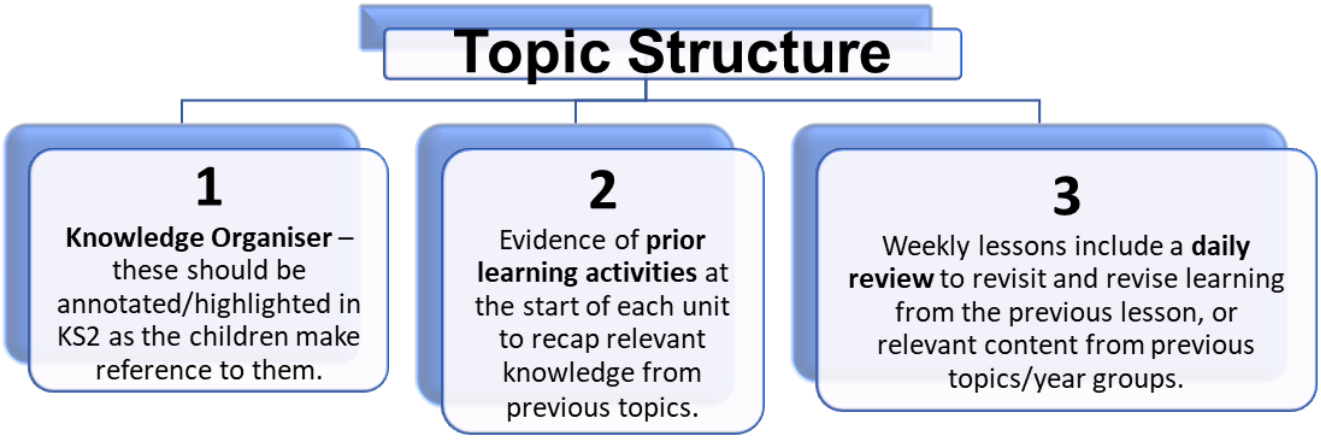
Computing Intent, Implementation and Impact

Computing Intent

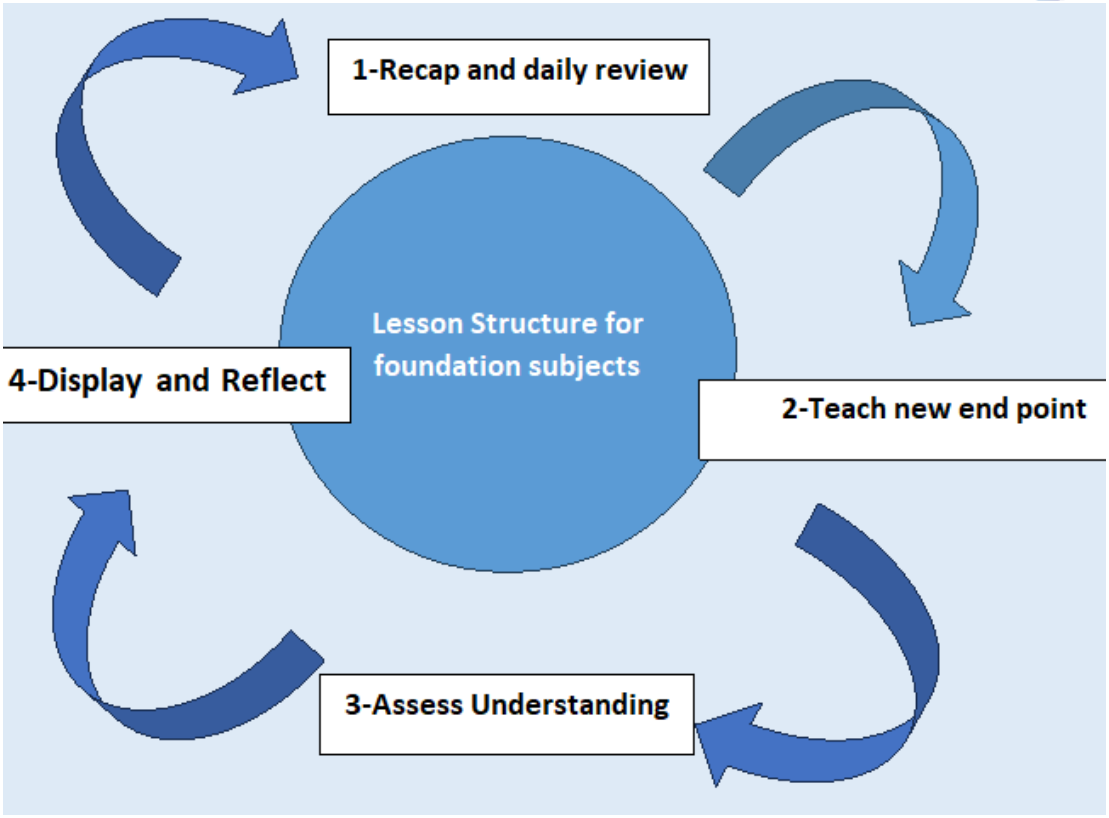
We aim for our pupils to have the computational **skills and knowledge** they need to become confident and **contributing members of a technologically diverse world**. With computer science at its core, we intend for our pupils to develop the problem-solving skills required to **make sense of complex ideas**. Our Computing Curriculum enables our pupils to **become digitally literate**, able to use technology to communicate and express themselves **safely and responsibly**. We aim to provide a wide range of learning experiences, incorporating a progression of skills, to prepare our children for an **ever-changing digital world.**

Computing Implementation

Computing is taught across school for one hour a week, with EYFS taking a holistic approach. Our Purple Mash driven computing curriculum covers the **three strands of computing**; computer science, information technology and digital literacy. It offers a **hands-on approach** to curriculum delivery, with every pupil having access to a device during the lessons. This allows pupils to **use their substantive knowledge to complete computational tasks,** with new knowledge being added and built on in each lesson. The substantive knowledge delivered to pupils is carefully sequenced, allowing for a **progression of skills and knowledge across the year groups**. Our topics are carefully structured to capitalise on a prior knowledge driven delivery, through the use of weekly quizzes and vocabulary recaps. Similarly, to support the acquisition of computational vocabulary, tier 2 vocabulary has been carefully selected by the subject lead, and vocabulary recurs through the curriculum to support overlearning (See End Points document for **colour coding of vocabulary**).
The framework below is implemented in each Computing topic across the school (Y1-6) to support sticky learning.



The use of **Information Technology is inter-woven throughout our curriculum**, allowing pupils to apply the skills they have acquired in Computing to a variety of learning experiences.
In addition to our topic structure, teachers also plan lessons which follow our lesson structure below:



Our MB10 (see separate document) is also used across the breadth of the curriculum to ensure that cognitive learning strategies are used as a pedagogical tool to support effective teaching and learning.

Computing Impact

Children in all year groups access computing regularly and speak positively about their lessons. They comment on how their teachers do regular review and recall sessions, focusing particularly on vocabulary. The Purple Mash programme is fully embedded which has achieved a curriculum which focusses on content rather than task – minimising any wasted time on logging in or understanding the functions of different programmes etc…

In terms of data, at the end of the 23-24 academic year, 85.4% of children reached the expected standards in Computing. As a trust, our moderation process concluded that 80% is the average across the Trust.

National Curriculum Aims and Objectives

National Curriculum Objectives	
KS1	Pupils should be taught to: • 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
KS2	Pupils should be taught to: • 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 • 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Stage Descriptors

Stage Descriptors (agreed upon on a Trust level)	
EYFS	**E-Safety** Talk about good & bad choices in real life e.g. taking turns, saying kind things, helping others, telling an adult if something upsets you. Play appropriate games on the Internet. Talk about good and bad choices when using websites – being kind, telling a grown up. if something upsets us & keeping ourselves safe by keeping information private. **Programming** Help adults operate equipment around the school, independently operating simple equipment. Use simple software to make things happen. Press buttons on a floor robot and talk about the movements. Explore options and make choices with toys, software and websites. **Multimedia** Use a mouse to rearrange objects and pictures on a screen. Recognise text, images and sound when using ICT. Use a camera or sound recorder to collect photos or sound. Use paint programs to create pictures. Begin to use a keyboard see programming. Develop an interest in ICT by using age-appropriate websites or programs. **Technology in Our Lives** Recognise purposes for using technology in school and at home Understand that things they create belong to them and can be shared with others using technology. Recognise that they can use the Internet to play and learn. **Data Handling** Collect information as photos or sound files
KS1 **Y1**	**Computer Science** Explain that an algorithm is a set of instructions. Know that an algorithm written for a computer is called a program. Work out what is wrong when the steps are out of order in instructions. Say if something does not work how it should because my code is incorrect. Try and fix my code if it isn't working properly. Make good guesses of what is going to happen in a program. For example, where the turtle might go. **Information Technology** Sort sound, pictures and text. Add sound, pictures and text to a program such as 2Create a story. Change content on a file such as text, sound and images. Name my work. Save my work. Find my work. **Digital Literacy** Say what technology is. Say what examples of technology are in school. Say what examples of technology are at home. Know that a chair uses old technology and a smart phone uses new technology. Keep my login information safe. Save my work in a safe place such as 'My Work' folder

KS1 **Y2**	**Computer Science** Explain an algorithm is a set of instructions to complete a task. Know I need to carefully plan my algorithm so it will work when I make it into code. Design a simple program using 2Code that achieves a purpose. Find and correct some errors in my program. Say what will happen in a program. Spot something in a program that has an action or effect (does something). **Information Technology** Organise data – for example, using a database such as 2Investigate. Find data using specific searches – for example, using 2Investigate. Use several programs to organise information – for example, using binary trees such as 2Question or spreadsheets such as 2Calculate. Edit digital data such as data in music composition software like 2Sequence. Name, save and find my work. Include photos, text and sound in my creations. **Digital Literacy** Find information I need using a search engine. Know the consequences of not searching online safely. Share work and communicate electronically – for example using 2Email or the display boards. Report unkind behaviour and things that upset me online, to a trusted adult. See where technology is used at school such as in the office or canteen. Understand that my creations such as programs in 2Code, need similar skills to the adult world. e.g. The program used for collecting money for school trips
LKS2 **Y3**	**Computer Science** Make a real-life situation into an algorithm for a program. Design an algorithm carefully, thinking about what I want it to do and how I can turn it into code. Identify an error in my program and fix it. Experiment with timers in my programs. Identify the difference in using between the effect of a timer or repeat command in my code. Know that a variable stores information while a program is running (executing). Identify 'If' statements, repetition and variables. Read programs with several steps and predict what it will do. Identify different ways that the internet can be used for communication. Use email such as 2Email to respond to others appropriately and attach files. **Information Technology** Carry out searches to find digital content on a range of online systems, such as within Purple Mash or on an internet search engine. Collect data and input it into software. Analyse data using features within software to help such as, formula in 2Calculate (spreadsheets). Present data and information using different software such as 2Question (branching database) or 2Graph (graphing tool). Consider what the most appropriate software to use when given a task by my teacher. Create purposeful (appropriate) content and attach this to emails. **Digital Literacy** Create a secure password. Explain the importance of having a secure password and not sharing it with others. Explain the negative consequences of not keeping passwords safe and secure. Understand the importance of keeping safe online and behaving respectfully. Use communication tools such as 2Email respectfully and use good etiquette. Report unacceptable content and contact online in more than one way to a trusted adult
LKS2 **Y4**	**Computer Science** Turn a real-life situation to solve into an algorithm, using a design that shows how I can accomplish this

	in code. Use repetition in my code. For example, using a loop that continues until a condition is met such as the correct answer being entered. Use timers within my program designs more accurately to create repetition effects. For example, I can create a counting machine. Use selection (decision) in my programming. For example, using an 'if statement' for a question being asked and the program takes one of two paths. Use variables within my program and know how to change the value of variables. Use the user inputs and output features within my program, such as 'Print to screen'. Identify errors in my code by using different methods, such as steeping through lines of code and fixing them. Read programs that contain several steps and predict the outcomes with increasing accuracy. Recognise the main component parts of hardware which allow computers to join and form a network. Understand that network and communication components can be found in many different devices which allow them to join the internet. **Information Technology** Understand the purpose of a search engine and the main features within it. Can look at information on a webpage and make predictions about the accuracy of information contained within it. Can create and improve my solutions to a problem based on feedback. For example, create a program using 2Code. Can review solutions that others have created, using a checklist of criteria. Can work collaboratively to create content and solutions. Can share digital content using a variety of applications such as: 2Blog, 2Email and Display Boards. **Digital Literacy** Have a good understanding of the online safety rules we learn at school. Demonstrate how to use different online technologies safely. Demonstrate how to use a few different online services safely. Know I have a right to privacy both on and offline. Recognise that my wellbeing can be affected by how I use technology. Report with ease any concerns with content and contact online and know immediate strategies to keep safe.
UKS2 **Y5**	**Computer Science** Make more complex real-life problems into algorithms for a program. Test and debug my programs as I work. Convert (translate) algorithms that contain sequence, selection and repetition into code that works. Use sequence, selection, repetition, and some other coding structures in my code. Organise my code carefully for example, naming variables and using tabs. I know this will help me debug more efficiently. Use logical methods to identify the cause of any bug with support to identify the specific line of code. Know the importance of computer networks and how they help solve problems and enhance communication. Recognise the main dangers that can be perpetuated via computer networks. Explain what personal information is and know strategies for keeping this safe. Use the most appropriate form of online communication according to the digital content. For example, use 2Email, 2Blog and Display Boards. **Information Technology** Search precisely when using a search engine. For example, I know I can add additional words or removes words to help find better results. Explain in detail how accurate, safe and reliable the content is on a webpage. Make appropriate improvements to digital work I have created. Comment on how successful a digital solution is that I have created. For example, a program built in 2Code that sorts decimals numbers.

	Work collaboratively with others creating solutions to problems using appropriate software such as 2Code. Use collaborative modes such as within 2Connect to work with others and share it. **Digital Literacy** Have a secure knowledge of online safety rules taught at school. Demonstrate the safe and respectful use of different online technologies and online services. Always relate appropriate online behaviour to my right to have personal privacy. Know how to not let my mental wellbeing or others be affected by use of online technologies and services
UKS2 **Y6**	**Computer Science** Turn a complex programming task into an algorithm. Identify the important aspects of a programming task (abstraction). Decompose important aspects of a programming task in a logical way, identifying appropriate coding structures that would work. Test and debug my program as I work on it and use logical methods to identify a cause of a bug. Identify a specific line of code that is causing a problem in my program and attempt a fix. Translate algorithms that include sequence, selection and repetition into code and nest these structures within each other. Use inputs and outputs within my coded programs such as sound, movement and buttons and represent the state of an object. Interpret (understand) a program in parts and can make logical attempts to put the separate parts together in an algorithm to explain the program as a whole. Explain the difference between the internet and the World Wide Web. Explain what a WAN and LAN is and describe the process of how access to the internet in school is possible. **Information Technology** Use filters when searching for digital content. Explain in detail how accurate and reliable a webpage and its content is. Compare a range of digital content sources and rate them in terms of content quality and accuracy. Consider the intended audience carefully when I design and make digital content. Design and create my own online blogs. **Digital Literacy** Demonstrate safe and respectful use of a range of different technologies and online services. Identify more discrete inappropriate behaviours online. For example, someone who may be trying to groom me or someone else. Use critical thinking to help me stay safe online. Know the value of protecting my privacy and others online.

Computing Planning at Marus Bridge

Long Term Plans

Each year group provides LTPs which give an overview of the learning/topics which will take place over the course of the year. These are shared with parents on our website.

Medium Term Plans

MTPs are completed by class teachers every half term. The MTP maps out the sequence of objectives to be taught within the Computing topic for that half term. MTPs list the lesson objectives (presented as a WALT to the children) and documents the basic overview of the lessons. Weekly plans, PowerPoints and lesson resources are then saved in the staff Shared Area and audited by the subject and curriculum lead annually.

Scheme of Work

The following topics/scheme of work is followed here at Marus Bridge. All planning for these topics has been developed with the assistance of the Purple Mash Scheme. Objectives for each topic can be found within the Computing End Point Document.

Predominant Area of Computing*		
Computer Science	Information Technology	Digital Literacy

*Most units will include aspects of all strands.

Year 1

Unit 1.1	Unit 1.2	Unit 1.3	Unit 1.4	Unit 1.5	Unit 1.6	Unit 1.7	Unit 1.8	Unit 1.9
Online Safety & Exploring Purple Mash	**Grouping & Sorting**	**Pictograms**	**Lego Builders**	**Maze Explorers**	**Animated Story Books**	**Coding**	**Spreadsheets**	**Technology outside school**
Number of lessons: 4	Number of lessons: 2	Number of lessons: 3 Main tool: 2Count	Number of lessons: 3	Number of lessons: 3 Main tool: 2Go	Number of lessons: 5 Main tool: 2Create A Story	Number of lessons: 6 Main tool: 2Code	Number of lessons: 3 Main tool: 2Calculate	Number of lessons: 2

Year 2

Unit 2.1	Unit 2.2	Unit 2.3	Unit 2.4	Unit 2.5	Unit 2.6	Unit 2.7	Unit 2.8
Coding	**Online Safety**	**Spreadsheets**	**Questioning**	**Effective Searching**	**Creating Pictures**	**Making Music**	**Presenting Ideas**
Number of lessons: **5** Main tool: 2Code	Number of lessons: **3**	Number of lessons: **4** Main tool: 2Calculate	Number of lessons: **5** Main tool: 2Question 2Investigate	Number of lessons: **3**	Number of lessons: **5** Main tool: 2Paint A Picture	Number of lessons: **3** Main tool: 2Sequence	Number of lessons: **4**

Year 3

Unit 3.1	Unit 3.2	Unit 3.3	Unit 3.4	Unit 3.5	Unit 3.6	Unit 3.7	Unit 3.8	Unit 3.9
Coding	**Online safety**	**Spreadsheets**	**Touch Typing**	**Email (inc. email safety)**	**Branching Databases**	**Simulations**	**Graphing**	**Presenting**
Number of lessons:6	Number of lessons: 3	Number of lessons: 3 4 lessons for Crash Course	Number of lessons: 4	Number of lessons: 6	Number of lessons: 4	Number of lessons: 3	Number of lessons: 3	Number of lessons: 5\6*
Main tool: 2Code		Main tool: 2Calculate	Main tool: 2Type	Main tool: 2Email	Main tool: 2Question	Main tool: 2Simulate	Main tool: 2Graph	Main tool: PowerPoint or Google Slides

Year 4

Unit 4.1	Unit 4.2	Unit 4.3	Unit 4.4	Unit 4.5	Unit 4.6	Unit 4.7	Unit 4.8	Unit 4.9
Coding	**Online Safety**	**Spreadsheets**	**Writing for Different Audiences**	**Logo**	**Animation**	**Effective Searching**	**Hardware Investigators**	**Making Music**
Number of lessons: 6	Number of lessons: 4	Number of lessons: 6	Number of lessons: 5	Number of lessons: 4	Number of lessons: 3	Number of lessons: 3	Number of lessons: 2	Number of lessons: 4
Main tool: 2Code		Main tool: 2Calculate		Main tool: 2Logo	Main tool: 2Animate			Main tool: Busy Beats

Year 5

Unit 5.1	Unit 5.2	Unit 5.3	Unit 5.4	Unit 5.5	Unit 5.6	Unit 5.7	Unit 5.8
Coding	**Online Safety**	**Spreadsheets**	**Databases**	**Game Creator**	**3D Modelling**	**Concept Maps**	**Word Processing**
Number of lessons: 6	Number of lessons: 3	Number of lessons: 6	Number of lessons: 4	Number of lessons: 5	Number of lessons: 4	Number of lessons: 4	Number of lessons: 8
Main tool: 2Code		Main tool: 2Calculate	Main tool: 2Investigate	2DIY 3D	Main tool: 2Design & Make	Main tool: 2Connect	Main tool: MS Word or Google Docs

Year 6

Unit 6.1	Unit 6.2	Unit 6.3	Unit 6.4	Unit 6.5	Unit 6.6	Unit 6.7	Unit 6.8	6.9
Coding	**Online Safety**	**Spreadsheets**	**Blogging**	**Text Adventures**	**Networks**	**Quizzing**	**Understanding Binary**	**Spreadsheets**
Number of lessons: 6	Number of lessons: 2	Number of lessons: 5	Number of lessons: 4	Number of lessons: 5	Number of lessons: 3	Number of lessons: 6	Number of lessons: 4	Number of lessons: 8
Main tool: 2Code		Main tool: 2Calculate	Main tool: 2Blog			Main tool: 2Quiz		Main tool: Excel or Google Sheets

Computing Assessment at Marus Bridge

In Reception, children are assessed against the Early Learning Goals for 'Understanding the World'. For children in Years 1 - 6, children are summatively assessed in Computing at the end of each academic year on Arbour (our internal assessment system). These assessments are based on children's engagement, retention and articulation of the 'End Point' objectives for their year group. To inform these assessments, class teachers keep a log of children's achievement in each topic in their 'formative assessment' booklets, along with any notes to support their judgements.

The following assessment strategies support teacher observation and data collection:

- Informal quizzes
- Classroom questioning
- Daily Review analysis
- Questionnaires
- Self and peer assessments
- Presentations
- Speaking and listening activities
- Prior learning activities
- Knowledge Review Week activities
- End of unit formative assessments (completed a few weeks after the topic has finished)

At the end of each academic year, each child is assigned one of the following gradings on Arbour:

PKS (Pre-Key Stage)	Children have not been exposed to the full curriculum due to a significant SEND.
HNM (Has Not Met)	Children can't articulate answers to the majority of the questions listed in the End Point document for this subject.
EXS (Expected)	Children can articulate answers to the majority of the questions listed in the End Point document for this subject.
Gifted and Talented	Children show a specific talent for an aspect of the subject.

Resources:

The published scheme of work is accessed via the Purple Mash online platform. All teachers and pupils have a username and password that may used in school and at home. Teachers can download resources should they wish to. There is a knowledge organiser for each unit of work which will be shared with the children at the start of that topic with key vocabulary and other important information that the children will be taught.

Computers and tablets are stored in locked charging units that are accessible by staff only. We have a weekly slot with the trust ICT team who will come and fix any problems we may have as long as these are reported to the help desk in advance of their visit. (This can be done by emailing: ithelpdesk@marusbridge.co.uk) The trust ICT team should be advised which or if items need replacing or apps need adding. The maintenance of the hardware is the responsibility of all, and not just that of the subject co-ordinator.

The software and tools required to teach the Purple Mash package are included within the subscription and can be found within the package online.

In school, we have the following hardware to assist with the effective delivery of computing lessons:

- 30 x UKS2 laptops
- 30 x LKS2 laptops
- 72 x iPads
- Dictaphones
- Digital cameras
- 6 Robotic programmable cars
- Bee Bots

Health and Safety

- Children should not enter the server room or access hardware trollies
- Devices must be plugged back in under direct adult supervision
-
- Cables should not be hanging across the floor during computing lessons
- Water bottles are not to be on tables when equipment is being used
- Children are to be monitored at all times when using equipment.

Safeguarding Considerations

Any external providers must provide evidence in the office of the Enhanced DBS before being left alone with pupils. They must also be reminded of the importance of not using mobile phones within the school.

Inclusion Considerations

The class teacher meets the needs of the most able and SEN by differentiating Computing lessons through levels of support provided and adopting a mastery approach. Children identified as having additional Special Educational Needs may need greater differentiation of materials and tasks consistent with that child's I.E.P. (Individual Education Plan). More able children will be challenged and motivated by greater differentiation of challenge. The class teacher also aims to identify those children who may be gifted in Computing and provide them with appropriate learning opportunities. All children will be given opportunities to participate on equal terms in all Computing activities and due consideration will be given to the principles of inclusion.

As a school, we use our 'SEND Toolkit for the Wider Curriculum' to ensure every child's needs are met in Computing:

Non-Negotiable Adaptions
(should be considered in **EVERY** lesson):

1) **Reduce** the amount of knowledge to be learnt (3-4 pieces maximum)

2) **Concentrate on the content**, not the task

3) Link to **prior-knowledge**

4) **Limit admin tasks** (avoid spending too much time on admin which may hinder cognitive load – such as cutting out or writing long WALTs)

5) **Model activities** (I do – we do- you do)

6) **Consider IEPs/EHCPs** (Ie – consider how a hands-on activity might affect those with sensory needs and adapt appropriately. Consider whether buff printing will be helpful)

Possible Adaptions

(Select where appropriate for each subject/lesson):

Visual Aids Provide images to explain vocab/concepts rather than wordy definitions	**Key Vocabulary Banks** Using vocab from the End Points, reduce the number and send some key vocab home, or rehearse in school.	**Continuous Provision** Provide an alternative hands-on activity for the children to access.	**Pre-Teaching** Could a member of staff/a volunteer give some input before the lesson?
Mixed Ability Groups/Pairs Try to limit group size to 3 children to ensure that all children are actively involved. Give SEND children a specific role within the group.	**Print Longer WALTS** Depending on individual needs, this may help some SEND children to reduce cognitive load.	**Adapted Knowledge Organiser** Reduce the vocabulary and provide visuals.	**Differentiated Texts** If using texts/books as the source of information, differentiate the text/book. Use online sources for this for workload
Provide Additional Adult Support	**Provide Additional Brain Breaks**	**Simplified Recording Methods** Such as a reduced table in science, or a partially completed bar chart	**Differentiated Research Sources**
Consider Timings of Interventions Ensure that children do not miss a whole unit/input for intervention.	**Reduce Distractions** (In a lesson such as music, would excess noise prevent children from engaging? Could they complete the lesson in a quieter spot?)	**Adapt the Apparatus** Eg – provide larger equipment in PE etc…	**Individual Interests** Tap into individual interests to help represent information. Eg – a child who loves drawing might make a picture to represent what they've learnt in Computing

Subject Monitoring:

The Computing coordinator will complete one audit within each academic year to assess children's understanding and monitor teaching against the National Curriculum and End Point Objectives. This will focus on sampling children's work/books, child interviews and lesson drop ins/observations.

Computing is audited in the summer term each year, and an action plan for the following 12-month period is devised in response to the audit.

In the spring and autumn terms, the Computing lead will be given time (up to a full day each term if needed) to implement actions to support their action plan targets and provide support when needed. Support will be offered to any year groups who require additional information and guidance. This may be done by: discussing assessment methods; modelling lessons; inviting teaching staff to observe the Computing coordinator; providing training or observing lessons and providing constructive feedback.

Governors are to be provided with an update each term in relation to the subject development. The Governor currently assigned to Computing at Marus Bridge is Ruth Crossley.

The Rowan Learning Trust

Our logo was carefully chosen to represent the children, young people and adults in our learning community who strive for excellence through high aspiration and high expectation.


The Rowan Learning Trust
Registered Office: Hawkley Hall High School, Carr Lane, Wigan, WN3 5NY.
Company Number 8010464