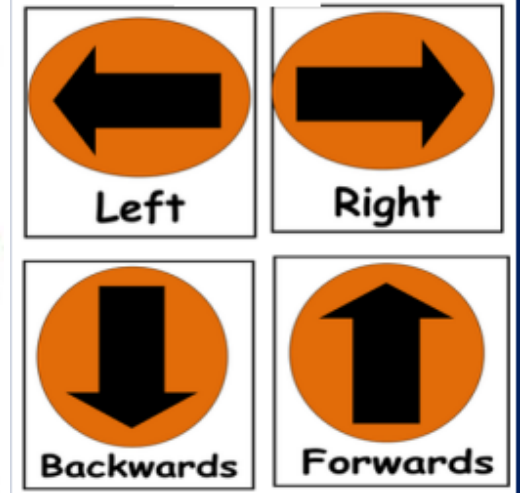
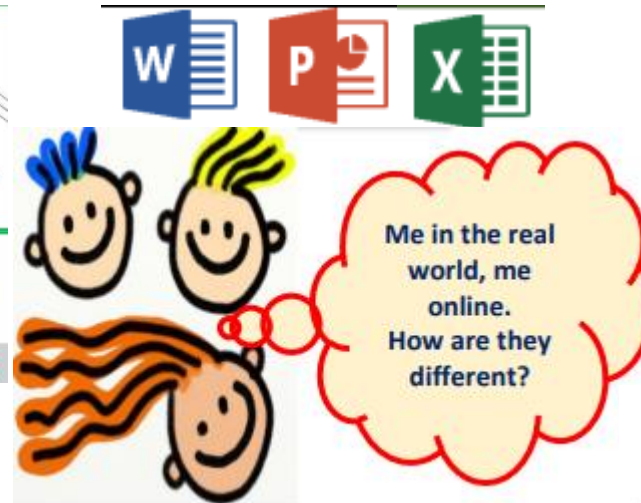


The Computing Curriculum at Brownlow Fold



PEGI
(Pan European Game Information)
What are the possible issues of accessing games that are a higher PEGI rating?

3	7	12	16	18
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Some of the most popular Web Browsers		
Microsoft - Edge	Google - Chrome	Apple - Safari



Purpose of Study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims

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.

Curriculum Design/Computing Key Teaching Methodology/Strategies

Our curriculum has been carefully designed so that pupils gain more knowledge over time. Some knowledge is very important, and we return to this regularly to help it 'stick' in pupils' memory. Knowledge learned across the wider curriculum facilitates comprehension. It also helps our pupils gain a broader vocabulary. We know that children are exposed to a richer **vocabulary** base when they access a broad curriculum, and this is very important to their future success. We have differentiated between three tiers of language:

- **Tier 1 vocabulary:** Everyday words, which might need to be taught explicitly, such as 'good', 'child' or 'Sunday'.
- **Tier 2 vocabulary:** Words which appear across the curriculum but less commonly in everyday speech, such as 'examine', 'deceive' or 'forthright'.
- **Tier 3 vocabulary:** Words which are specific to a subject: for example, in science, pupils need to grasp the scientific meaning of terms such as 'evaporation.'

In our curriculum plans we have outlined the specific vocabulary children need to know, use and remember at each stage in their learning. In designing our curriculum, teachers and learners use a **prime learning challenge**, expressed as a question, as the starting point. Using the information gained from **pre-learning tasks** and our school context, a series of **subsidiary questions** are then asked. **Pre-learning** tasks ensure that our pupils are given the opportunity to share what they think they already know about a particular topic. Well-planned pre-learning tasks inform teachers of any misconception pupils may have. We know that knowledge 'sticks' when links are made between subjects. Webs of knowledge are created in our memories (schema) when we create meaningful links between learning. The more we introduce pupils to related content, the deeper knowledge will be. **Key concepts/knowledge** in each subject are revisited over time. We use the ten evidence-based Principles of Direct Instruction (Rosenshine) to build schema through carefully sequenced **component tasks** leading to **composite tasks**. **Retrieval practice** provides opportunities for pupils to practise applying the knowledge they have understood to consolidate understanding and strengthen recall.

Strategic Focus: Prioritising Foundational Knowledge, Basic Skills, and the Bottom 20% in Reading

Foundational Knowledge

Our curriculum is built on the principle that secure foundational knowledge underpins all future learning. In the primary phase, this means giving children repeated opportunities to acquire, revisit, and apply core concepts across English and the wider curriculum. We sequence learning so that pupils develop strong recall and understanding of essential subject knowledge, ensuring that no child is left behind in the building blocks of literacy.

Basic Skills

The teaching of basic skills particularly early reading, phonics, vocabulary development, spelling, and handwriting is a non-negotiable priority. We recognise that fluency in these skills is essential to accessing the broader curriculum. High expectations, consistent routines, and carefully structured practice ensure that pupils not only acquire these skills but also gain confidence in using them independently and across subjects.

Addressing the Needs of the Bottom 20% in Reading

We place a particular emphasis on supporting the lowest 20% of readers, ensuring early identification, targeted intervention, and bespoke support. This includes:

- Systematic use of assessment to monitor progress and highlight gaps.
- Structured interventions (including additional phonics, precision teaching, and guided reading).
- Deployment of skilled adults to provide intensive, high-quality support.
- Building motivation and fostering positive attitudes to reading by providing texts that are both accessible and engaging.

Equity and Excellence

Our strategy reflects a moral and professional commitment to equity. We know that reading is the gateway to the curriculum, and we are determined to close the gap for vulnerable learners. By prioritising foundational knowledge, embedding basic skills, and investing in the progress of the bottom 20% of readers, we ensure that every child leaves primary education equipped for the next stage of learning.

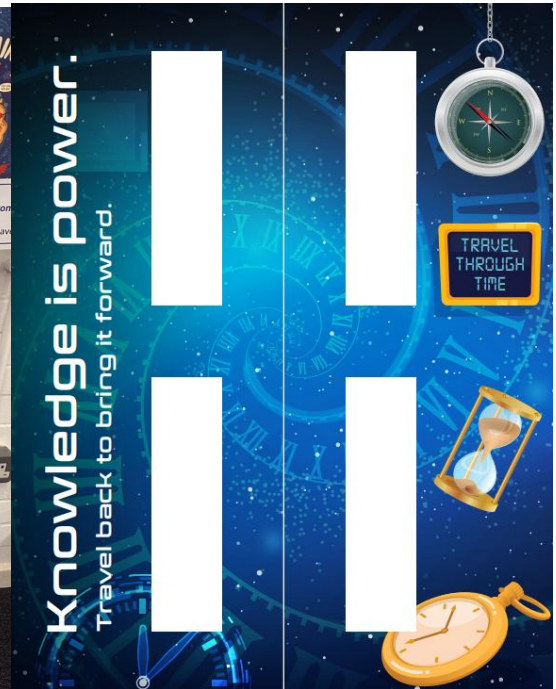
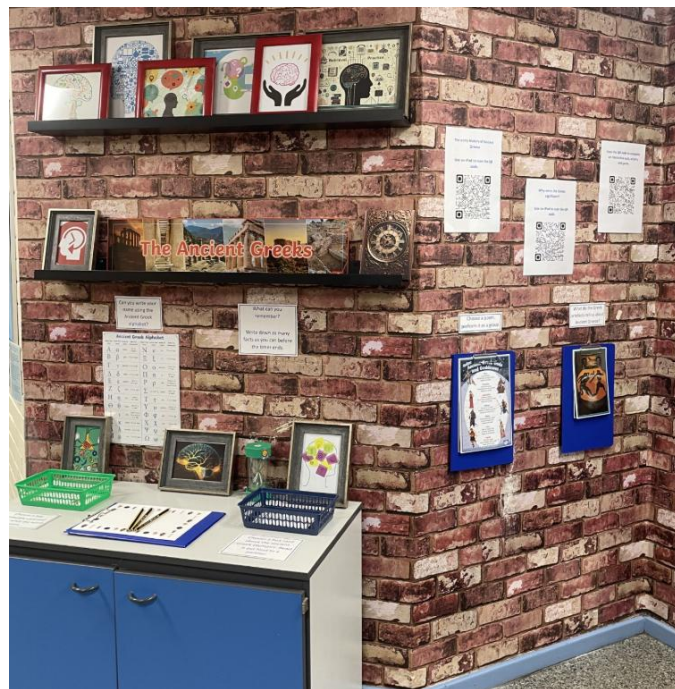
Retrieval Alley

To support the retrieval practice activities, we have created a **Retrieval Alley** in school. This corridor serves as a real-life memory chamber for the children bringing all of the **key learning** to the fore front of children's minds. Each half term one year group fills the chamber with essential knowledge in an interactive way. Classes whose year group is not the focus on the main corridor also create a mini chamber/display in their classroom.

Autumn One – Year Four Memory Chamber
Autumn Two - Year Five Memory Chamber

Spring One - Year Six Memory Chamber
Spring Two - Year Three Memory Chamber

Summer One - Year Two Memory Chamber
Summer Two - Year One Memory Chamber



Within each unit of work, we include a **Green for Growth post learning check**. This task is designed to enable pupils to showcase all the knowledge they have acquired and demonstrate their depth of understanding. **The Key Knowledge for each unit is highlighted in bold, retrieved and then applied to future learning across the curriculum.** Each unit of work is also enhanced by a unit specific **knowledge organiser** which highlights the key knowledge for that particular unit of work.

Each class has a 'Key Knowledge Box' which serves as a structured repository of essential learning, clearly outlining the core knowledge that every child is expected to retain by the end of their year group. By encapsulating key facts, concepts, and vocabulary, the knowledge boxes ensure that there is a clear understanding of the foundational learning for each subject area, strengthening long-term retention and curriculum continuity throughout the school.

Brownlow Time Traveller

To strengthen retrieval practice across the curriculum each class awards a 'Time Traveller of the Week' certificate. Pupils revisit prior learning (travelling back in time).

Teachers look for children who:

- Deliberately connect current lessons to previous units
- Recall key facts, vocabulary and methods with increasing accuracy
- Explain how their prior knowledge helped them today
- Show effort and a positive attitude during retrieval activities



Knowing more and remembering more

All teachers follow this approach which supports the consolidation of prior knowledge and the incremental development of new knowledge. Brownlow is Brilliant (whole school PP) is shared daily with children and is an opportunity for the children to retrieve key learning. Timetabled retrieval lessons also focus on retrieving learning from the previous term. School have purchased LBQ questions which are low stakes quizzes which assess the children's knowledge of the key curriculum content. Pupils use ipads to answer questions and progressing at their own pace. Teachers gain immediate feedback and live analysis that supports assessment and future planning.

Retrieval curriculum conversations also take place in mixed year groups with a subject focus once every half term. This provides opportunities for pupils discuss their learning, from previous year groups, learn about future learning, consolidate their understanding and strengthen their recall.

Link	Learn	Know	Retrieve	Apply
				
Focus on prior knowledge through pre learning questions ▪ Within the same subject ▪ Within another subject ▪ From personal experience	Use the prime learning challenge, expressed as a question. Use the information gained from pre-learning tasks and our school context, to answer the subsidiary questions	Use the Knowledge Organisers and the Green for Growth Check	Link ideas to existing knowledge and organise into mental models/schemata	Apply knowledge to future learning

Oracy

At Brownlow Fold, we view **oracy** as a fundamental skill that underpins learning, social development, and future success. Through deliberate teaching across all subjects, pupils are supported to develop strong speaking and listening skills, use vocabulary and grammar accurately, and communicate with clarity and respect. Oracy at Brownlow Fold not only supports academic achievement, critical thinking, and deeper understanding, but also builds confidence, empathy, and positive relationships. By providing language-rich experiences, we help close attainment gaps, ensuring every child has the opportunity to thrive in school and beyond.

Teaching and Learning Pedagogy

Principles of Direct Instruction at Brownlow Fold

At Brownlow Fold, our teaching is underpinned by the **Principles of Direct Instruction**: clear modelling, guided practice, frequent checking for understanding, and scaffolded support. Our Computing aligns closely with these principles, ensuring consistency across our whole-school approach.

Review: Each lesson contains a short review of previous learning to strengthen connections and recall. 	Modelling & Explanations: Models and worked examples are provided to demonstrate learning in action (I DO) 	Guided Practice: Practice is guided by the teacher as pupils begin to practice new learning. Teachers offer support and prompts (WE DO) 	Checking for Understanding: The teachers continuously check for understanding by asking questions and giving feedback. 	Independent Practice: The teacher monitors independent practice, ensuring learning become automatic (YOU DO) 
Small Steps: New material is presented in small steps with opportunities to practise, reducing cognitive overload. 	Questioning: Children are asked lots of questions and responses checked for pupil understanding. 	Scaffolding: The teacher provides temporary support and scaffolds for difficult tasks which is gradually removed. 	High Success Rate: Aim for a high success rate during instruction to build confidence and to promote motivation. 	Review: The teacher facilitates daily, weekly and monthly retrieval practice to strengthen knowledge and promote automatic recall. 

What This Looks Like in Computing Using Purple Mash

Review (Retrieval Practice)

Each Purple Mash lesson begins with a short review of prior learning to strengthen recall and connections.

In practice:

Revisiting a previously used tool (e.g. opening a past 2Code or 2Paint file).

- Quick questions such as:

- *“What does this block do?”*
 - *“What did we use last lesson to make our character move?”*
- Children explaining previous learning using the interactive whiteboard or their own saved work.

Modelling & Explanations – I DO

The teacher explicitly models new learning using Purple Mash tools.

In practice:

- Teacher demonstrates on the board how to:
 - Add a new command in **2Code**
 - Change properties (speed, direction, repeat)
 - Use tools in **2Paint**, **2Animate**, or **2Type**
- Teacher verbalises thinking:
 - *“I’m choosing this block because I want the sprite to repeat the action.”*

This provides a clear worked example before pupils attempt it themselves

Guided Practice – WE DO

Pupils practise new skills with teacher support.

In practice:

- Children follow along step-by-step on their own devices.
- Teacher pauses regularly to check screens and address misconceptions.
- Scaffolded prompts:
 - *“What do we need to add next?”*
 - *“Which tool did I use to change the background?”*
- Class may complete part of the task together before moving on.
- **Checking for Understanding**

Understanding is checked continuously throughout the lesson.

In practice:

- Targeted questioning:
 - *“Why did your code stop working?” What happens if we remove this command?”*
- Immediate feedback as the teacher circulates.
- Use of pupil explanations and peer discussion to identify gaps

Independent Practice – YOU DO

Pupils apply learning independently while the teacher monitors.

In practice:

- Children complete a Purple Mash task independently (e.g. create a simple game, animation, or program).
- Tasks are differentiated using:
 - Built-in Purple Mash challenges
 - Success criteria or extensions
- Teacher supports where needed but encourages problem-solving.

Small Steps

New learning is broken down into manageable steps.

In practice:

- Lessons focus on one new concept at a time (e.g. sequencing before repetition).
- Each step is practised before adding complexity.
- Purple Mash activities are naturally structured in progressive stages.

Questioning

Frequent questioning ensures understanding and engagement.

In practice:

- Open and closed questions throughout the lesson.
- Children asked to predict outcomes before running code.
- Discussion about what worked, what didn't, and why.

Scaffolding

Support is provided and gradually removed.

In practice:

- Visual prompts on the board.
- Part-completed examples or templates.
- Checklists or success criteria.
- As confidence grows, pupils work more independently and creatively.

High Success Rate

Lessons are designed so pupils experience success.

In practice:

- Tasks matched closely to prior learning.
- Immediate visual feedback from Purple Mash (e.g. code running correctly).
- Early success builds confidence and motivation, especially for less confident learners

Ongoing Review

Retrieval practice is embedded over time.

In practice:

- Daily: Quick recall questions or revisiting tools.
- Weekly: Reusing skills in a different context (e.g. applying coding skills in a new project).
- Monthly: Linking learning across units (e.g. using programming skills within a game design task).

Adaptive Teaching

Adapting the curriculum for pupils with SEND in Computing including the SEND Learning Environment Checklist

At Brownlow we provide opportunity for all pupils to experience success by:

- Adapting lessons, whilst maintaining high expectations for all, so that all pupils have the opportunity to meet expectations.
- Balancing input of new content so that pupils master important concepts.
- Making effective use of learning support staff.
- Achieving external validation to quality assure provision – DAQM achieved November 2024 and BPTAA achieved in July 2025

All pupils access the same curriculum and are given scaffolds to support. This approach supports high achievement for everyone and raises aspirations for all pupils. Listed below are some of the strategies that a teacher may implement to support children dependent on the area of need. Teachers will also make in-the-moment adaptations such as changing their language, clarifying a task or re-explaining a concept or explaining it in a different way etc.

SEND Computing Curriculum Adaptations

Instructions are reinforced on how to use the computing equipment.

Explicit rules of when to use the equipment and when to be listening and focusing on verbal instructions are shared and reinforced.

Where possible, children with SEND will work in a group rather than independently so that they feel supported if they experience any issues with the equipment.

Prior to each lesson, the teacher will discuss what the computing session will involve and what programme/software/computing equipment will be used.

Printouts of the instructions that will be used in each lesson are provided.

Screenshots of the computer programme that will be used in the lesson are provided.

Extra time to complete tasks is given, especially when new concepts/programmes/software is being used.

Videos that are shown in computing lessons are subtitled.

Print outs or screenshots from the main input in lessons are provided.

Background noise is kept to a minimum, particularly when sound is being used with computers.

Headphones are provided for all children.

Modelling on screen is used to ensure that each child understands how to access programmes and the information within them.

Instructions are adapted, particularly those that contain unfamiliar technical vocabulary, so that each child can understand them.

Printouts are provided which include the images of symbols/icons/buttons that will be used in the lesson.

Adapting the curriculum for pupils who are more able in Computing

Key teaching strategies used to support provision for more able pupils:

- Task design: Teachers ensure the right pitch with appropriate challenge to engage pupils, i.e. tasks make them think, not merely do.
- Cutaway: Teachers determine if 'more able' pupils need all of the direct instruction for part of every lesson i.e. they may start the work earlier than the rest of the class.
- Adaptations: task, outcome, resources, how the pupils are grouped etc.
- Ongoing dialogue: Metacognitive approaches are used encouraging the children to reflect on their learning and make decisions
- Applying learning: Time to apply learning in a different context or extend learning, going sideways rather than always upwards.
- Working with others: Pair and group work.
- Beyond the classroom: Opportunities sought beyond the classroom

Subject Content

EYFS	Key Stage One	Key Stage Two
NURSERY: Personal, Social and Emotional Development – Remember rules without needing an adult to remind them. Physical Development – Match their developing physical skills to tasks and activities in the setting. Mathematics – Solve real world mathematical problems with numbers up to 5. Discuss routes and locations, using words like 'in front of' and 'behind'. Notice and correct an error in a repeating pattern. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then'. 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 the different factors that support their overall health and wellbeing: -sensible amounts of 'screen time'. Physical Development Develop their small motor skills so they can use a range of tools competently, safely and confidently. Mathematics Count objects, actions and sounds. Link the number symbol (numeral) with its cardinal number value. Select, rotate and manipulate shapes to develop spatial reasoning skills. Continue, copy and create repeating patterns.	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	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.

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 and Design Creating with Materials Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.		
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Intent

At Brownlow Fold, our high-quality computing curriculum equips pupils to use computational thinking and creativity to understand the world. Our Computing curriculum matches the scope and ambition of the national curriculum. Computing is clearly taught in the curriculum, in its own right, from the early years to the end of KS2. Computing curriculum plans prevent pupils from forgetting what was taught previously as retrieval practice is detailed within the curriculum. Computing plans clearly outline the knowledge elements in the curriculum and the pillars of progression. Despite there being no statutory computing curriculum in Early Years, any plans build a firm foundation and dovetail into the KS1 curriculum to ensure all children are ready to learn the content in year 1. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. Our pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology at a level suitable for the future workplace and as active participants in a digital world.

Computer Science

- Curriculum plans ensure pupils' knowledge of algorithms increase in complexity.
- Curriculum plans are well sequenced to develop a strong schema of algorithms over time.
- Pupils know that algorithms can exist separately from computer programs.
- Key algorithmic vocabulary is learned and used.
- Detailed plans ensure pupils get better at programming (sequence/selection/repetition)
- Plans outline how block-based programming will be taught and careful consideration has been given to avoid misconceptions so that pupils understand the wider goals of the algorithms they are coding

Information Technology

- Pupils are taught to recognise common uses of information technology beyond school.
- Pupils are taught to understand computer networks including the internet; how they can use multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.
- Pupils are taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

Digital Citizenship and Online Safety

- Plans and teaching ensure the knowledge of online safety is sufficiently different between years.
- Pupils will be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour and identify a range of ways to report concerns.
- The school's curriculum is planned and sequenced so that new knowledge and skills build on what has been taught before and towards its clearly defined end points for each year group.
- The curriculum is broad and ambitious for all pupils.
- Leaders have constructed a curriculum that is ambitious and designed to give all pupils, particularly disadvantaged pupils (including pupils with SEND), the knowledge and cultural capital they need to succeed in life. This is either the national curriculum or a curriculum of comparable breadth and ambition.

Digital Literacy

- Plans and teaching ensure pupils learn the ability and skill to find, evaluate, utilise, share, and create content using information technologies and the Internet.
- Pupils are taught how to 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.
- Pupils are taught how to use technology purposefully to create, organise, store, manipulate and retrieve digital content

Implementation

The Computing curriculum enables pupils to develop cumulatively sufficient knowledge by the end of each Key Stage. At Brownlow Fold we follow the stages outlined below: Declarative knowledge for each subject is mapped from EYFS to Year 6 to ensure our children learn cumulatively sufficient knowledge by the end of each Key Stage. Procedural knowledge such as implementing a 'repeat' command when coding or how to perform an advanced web search is mapped from EYFS to Year 6 to enable children to apply their knowledge as skills. Explicit teaching of vocabulary is central to children's ability to connect new knowledge with prior learning. Spaced retrieval practice is completed, through questioning, quizzes and peer-explanations. This further consolidates the transfer of information from working memory to long-term memory.

- All teachers adhere to the curriculum intent for computing.
- All teaching follows a sequence and builds up over a number of lessons.
- There is a clear rationale for the activities chosen in each lesson and this matches the intent.

- All teachers have high expectations and a high level of confidence and expertise, in terms of both their specialist and up-to-date knowledge and their understanding of effective learning in the subject.
- All teaching ensures that pupils are able to make use of their prior learning in moving their understanding forward; as a result, lessons are stimulating and often innovative.
- Pedagogical approaches are well matched to the stages of learning.
- All teachers ensure activities are focused and not distracting to ensure pupils remember what they have learnt.
- Teachers ensure pupils do not have an over reliance on adult support when tackling problems and independent thinking and learning is actively encouraged in all classes.
- All teachers present new learning in small connected steps and use a wide variety of methods to model concepts and processes, this ensures pupils working memory is not over loaded.
- The school's curriculum is coherently planned and sequenced towards cumulatively sufficient knowledge and skills for future learning and employment.
- The work given enables pupils to achieve the aims and ambition of the curriculum, which is coherently planned and sequenced towards cumulatively sufficient knowledge.
- All teachers identify, emphasise and repeat crucial content so that pupils know more and remember more.
- Pupils are able to refer to work completed and content learned in previous lessons.
- Teachers plan activities which provide systematic repetition of the core content to ensure it is secure in the memory and can subsequently be applied by pupils with fluency.
- Teachers break down knowledge into manageable blocks to build expertise.
- All teachers have expert knowledge in the computing curriculum they teach, if they do not, they are supported to address gaps in their knowledge so that pupils are not disadvantaged by ineffective teaching.
- All teaching is broken down into manageable chunks to allow pupils time to process new learning without overloading their working memory.
- Teaching approaches ensure that pupils can apply their knowledge and skills in different contexts.
- All teachers teach pupils the correct computing vocabulary as detailed in curriculum plans.
- Teachers check pupils' understanding effectively and identify and correct misconceptions.
- Activities are planned to revisit previously learned content and build up pupils' fluency.
- All teachers ensure there is ample chance for recall (building memory to automaticity)
- School organises trips and participation in competitions and other initiatives to further enhance the computing curriculum and broaden pupils' experiences.
- Within the teaching of computing, any necessary adaptations are made for pupils with SEND in order for them to gain access to the curriculum.

Children are taught to forge connections between their current learning and the 'big picture' of subject content. Formal, summative assessment in Computing takes place at the end of each foundation subject assessment cycle stating whether children are Well Below, Below, Working Towards, Expected, Exceeding, Working above. Formative assessment takes place continually throughout the year: assessment for learning is used to ensure lessons are pitched appropriately and to inform future planning.

Impact

Our Computing curriculum ensures that children leave Brownlow Fold:

- Knowledgeable, confident and creative users of a range of digital technologies.
- Equipped with the knowledge and skills to access the next stage of their learning, with a clear understanding of how quickly this knowledge will evolve.
- Able to apply their knowledge and skills in utilising information technologies to communicate their ideas to a range of audiences.
- Responsible digital users, able to explain how our online safety rules enable them to stay safe online. This is evidenced through our monitoring of the online spaces and platforms provided by the school e.g. Purple Mash,
- Fully aware of the risks of using digital technologies and measure they can take to mitigate against these risks.

Assessment

- All pupils are evidenced to be making at least good progress in computing as there is monitoring evidence to support the view that pupils know, remember and are able to apply the defined knowledge and skills to year group end- points.
- The majority of pupils enjoy the subject and can explain its value.
- The vast majority of pupils use the correct terminology independently and accurately.
- The vast majority of pupils appreciate that computing is of value.
- The vast majority of pupils demonstrate the deep learning of concepts and skills that the curriculum lays out.
- Pupils develop detailed knowledge and skills across the curriculum and, as a result, achieve well. This is reflected in the work that pupils produce.

Learning Beyond the classroom

Within the Computing curriculum each year group has opportunities to learn through external visitors and class trips which expose the children to computing beyond the classroom. These experiences all link to our bespoke curriculum and give our children a further insight into how their learning can be applied into a range of contexts.

In the **Early Years** pupils begin their Computing learning journey by exploring how things work, identifying technology around them and knowing and talking about sensible amounts of 'screen time'.

Year 1, 2, 4 and 6 participate in 'Internet Safety Day'. This is a whole school event where each class focuses on a different theme each academic year.

Year 3 and 6 go on a class trip to Bolton SICT, where they complete a full day of learning linked to their Computer Science unit of work.

Other Enrichment Opportunities: Children have the opportunity to take part in a KS2 computing club and are also encouraged to enter the annual Bolton SICT online safety competition.

Different Types of Knowledge in Computing

Declarative knowledge (Substantive Knowledge: Established Facts)

This is the subject knowledge and explicit vocabulary used to learn about the content. It consists of facts, rules and principles and the relationships between them. It can be described as 'knowing that.'

Procedural knowledge (Essential Disciplinary Knowledge: Methods and Concepts)

This is knowledge of methods or processes that can be performed. "It can be described as knowing how" It is through procedural knowledge that children gradually become more expert in their computational thinking and as creative, safe users of ICT.

Pupils develop their knowledge, skills and understanding of the key aspects of digital literacy, information technology and computer science, ensuring that they have learned the knowledge required to meet the aims of:

- National Curriculum for Computing (DfE, 2013)
- Education for a Connected World (UKCCIS, 2020)
- Teaching Online safety in Schools (DfE, 2019)

Whole School Concepts/Golden Threads

We have identified the key concepts that run through our curriculum which supports both teachers with delivering learning in a more impactful way and children with developing links and making connections between prior, current and future learning. Below are the 'Golden Threads' that feature in the Curriculum for Computing

Digital Citizenship	Information Technology	Digital Literacy	Computer Science
Children need to examine the consequences of their online activity—both good and bad. When teaching Digital Citizenship, it is vital that we thoroughly embed the principles of staying safe online and then move onto web content and how our pupils interact with it. It is important to use real world examples with our children to ensure that their learning is relevant to their life experiences.	This is how we interface with technology using existing hardware. We need to teach children how to navigate around a variety of devices, type, save work, find and move files. In addition, pupils need to understand the internet and the web, use search engines, understand networks and generally be efficient and independent users of a range of technologies.	Digital Literacy, is essentially how to use a whole host of different software. Having high levels of Digital Literacy enables us to decide which software we need to complete any given task, how to transfer skills and ultimately, be confident when using software. The essential component of digital literacy when it comes to the field of pedagogy is deep learning; of which there are six core skills: ▪ Collaboration ▪ Creativity ▪ Critical thinking ▪ Citizenship ▪ Character Traits ▪ Communication	Computer science has been deemed as important to the school curriculum because of its potential to teach children Computational Thinking or how to think. Computational Thinking can teach pupils how to be successful with design, logical reasoning, problem solving and resilience - all valuable well beyond the computer science classroom. The ability to create and adapt new technologies distinguishes computer science from computer literacy.

Children will learn the principles of keeping themselves and others safe online through Digital Citizenship and become responsible users of technology.

Children will demonstrate confidence, competence and resilience when using and applying a range of basic computer skills.

Children will learn to operate a variety of software, including the Internet, to accomplish given goals.

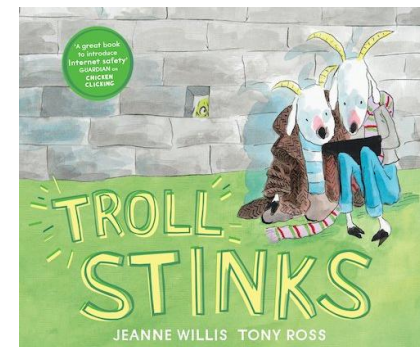
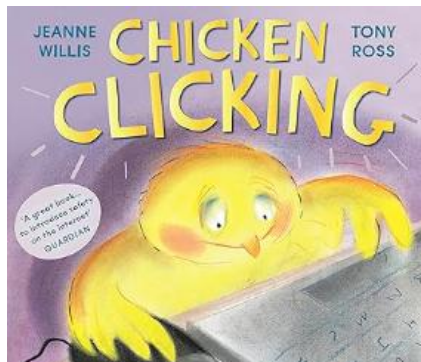
Children will develop their knowledge/understanding of Computer Science through programming and problem solving.

Children will learn of influential figures, their achievements and how they have shaped the future of technology. Children will combine and apply skills and knowledge of Computing through the exploration of STEM learning.

High quality resources and texts underpinning our curriculum

Computing is promoted and prioritised at Brownlow Fold which means knowledge and vocabulary is consistently being revisited throughout the curriculum. We use high quality texts and resources to inspire our children to create high quality pieces of writing, encourage the love of reading and embed their skills further. These texts and resources are chosen so that they are accessible and engaging for all children within the class. Children have access to a range of fabulous resources which are used to support learning. Each year group has access to various resources linked to each of their topics.

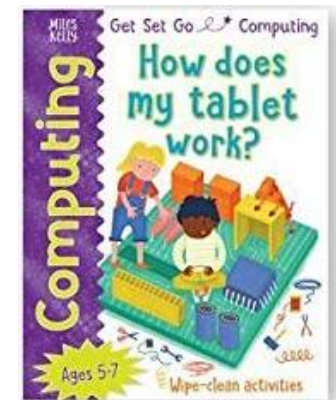
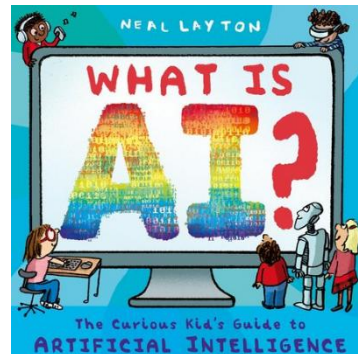
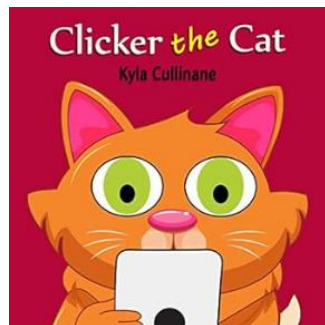
Early Years: Nursery



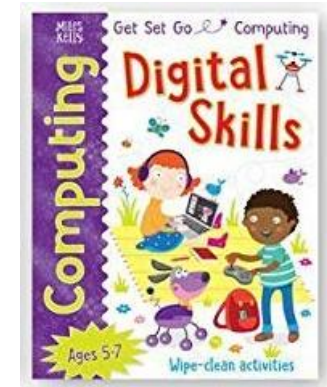
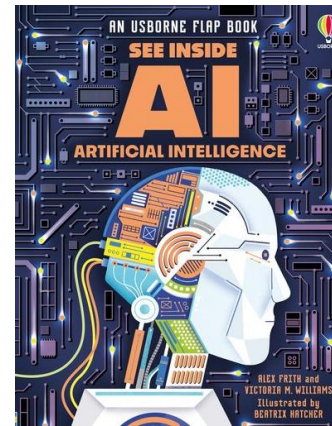
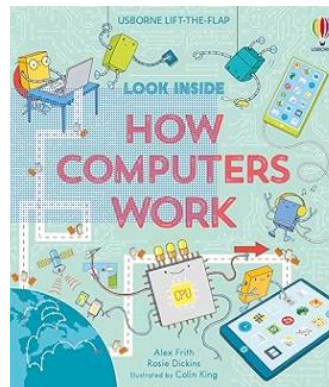
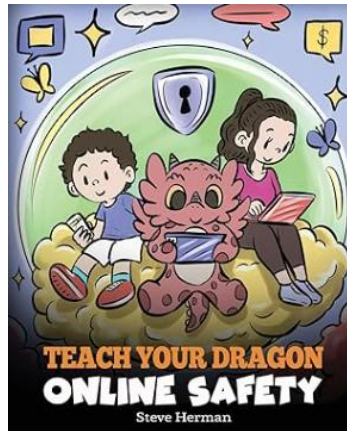
Early Years: Reception



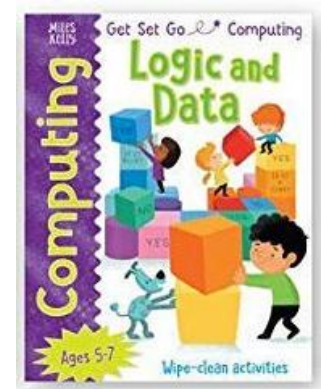
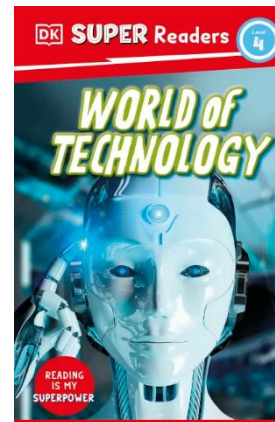
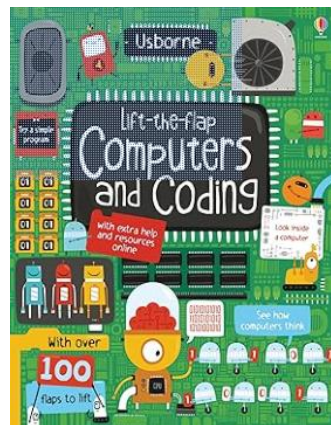
Year One



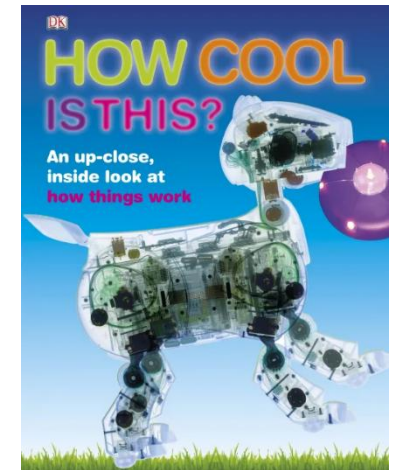
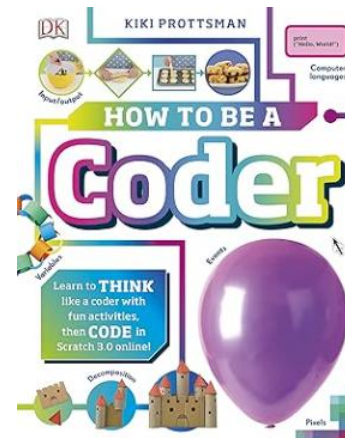
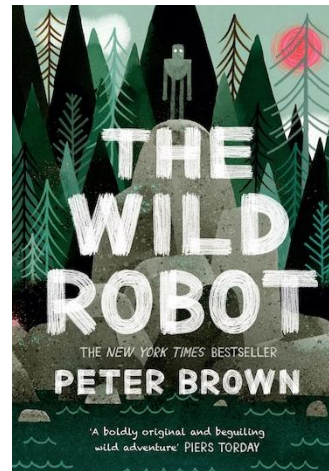
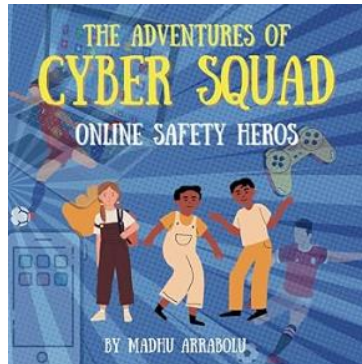
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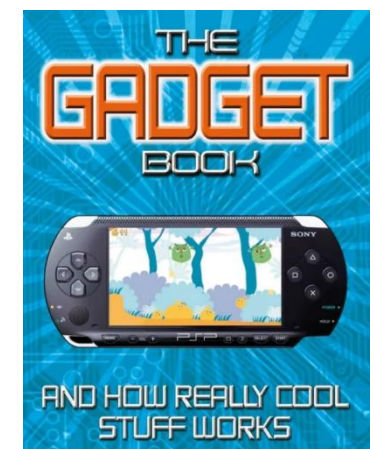
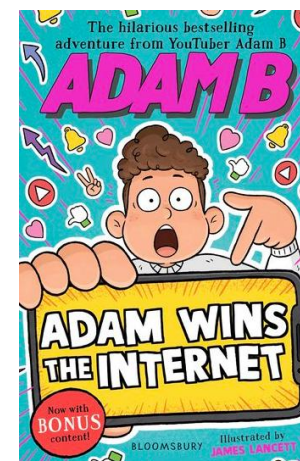
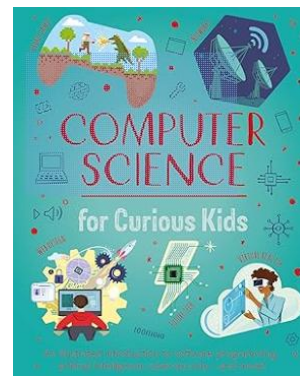
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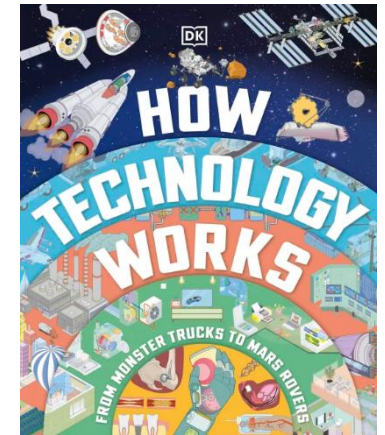
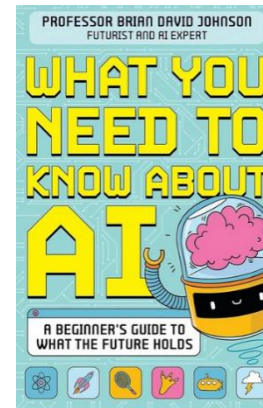
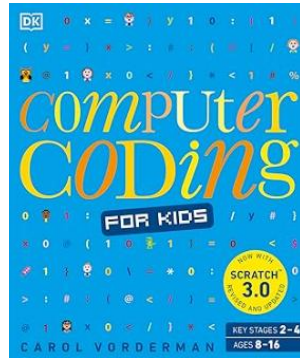
Year Four



Year Five



Year Six



The Brownlow Computing Curriculum Long Term Plan

	Autumn	Spring	Summer
EYFS	The most relevant statements for computing are taken from the following areas of learning: Personal, Social and Emotional Development Physical Development Understanding the World Expressive Arts and Design		
Year One	Digital Citizenship: Online Safety How do you use technology safely and respectfully, keeping personal information private? Digital Literacy: Music Planning Can you plan and create a piece of music?	Computer Science: Coding Can you use previously taught skills to help you solve problems and follow instructions? Can you use code blocks to predict and debug the outcome of an algorithm?	Pictograms Can you create a pictogram? Information Technology and Digital Literacy: Consolidation Project Can you develop your typing skills to help you research computing pioneers? Can you use the digital literacy skills you have learnt this year to create a profile of information linked to the computing pioneer Jack Kilby?
Year Two	Online Safety How do you use technology safely and respectfully, keeping personal information private? Creating Pictures Can you use and apply the skills you have learnt to create pictures in different styles using 2Paint a Picture?	Coding Do you know how to design, write and debug programs with a focus on sequencing, selecting and repeating?	Databases Do you know how to use a database to answer search questions? Information Technology and Digital Literacy: Consolidation Project Can you create an information page with a picture linked to Sir Tim Bernes Lee
Year Three	Digital Citizenship: Online Safety Can you use technology safely, respectfully and responsibly, recognising what is acceptable and unacceptable behaviour? Digital Literacy: Making Music Can you create your own piece of music?	Computer Science: Coding Can you identify the difference between an algorithm and a program? Can you use and apply the knowledge and skills you have acquired to design and create an interactive scene?	Spreadsheets & Databases Can you create your own branching database? Information Technology and Digital Literacy: Consolidation Project Can you create an information page about the computer pioneers Ada Lovelace and Charles Babbage?

Year Four	Digital Citizenship: Online Safety How do you use technology safely, respectfully and responsibly, recognising what is acceptable and unacceptable behaviour? Digital Literacy: Animations Can you create an animation?	Computer Science: Coding Can you use previously learnt skills to plan an algorithm and create a sequence? Can you plan and create a program using a repeat command?	Digital Literacy: Spreadsheets Can you create a spreadsheet? Information Technology and Digital Literacy: Consolidation Project Can you use the internet to research about the computing pioneers Hedy Lamarr & Radia Perlman? Can you use the digital literacy skills you have learnt this year to create an animation linked to the computing pioneers Hedy Lamarr & Radia Perlman?
Year Five	Digital Citizenship: Online Safety Can you explain how to use technology safely, respectfully and responsibly, and identify a range of ways to report concerns about content and contact? Digital Literacy: 3D Modelling Can you refine, edit, and adapt models to suit a design brief using the 2Design and Make tool?	Digital Literacy: Databases Do you know how to use, manipulate and create spreadsheets, as well as design and enter information accurately into your own database? Computer Science: Coding Can you use previously learnt skills to plan a sequence and use a repeat command? Can you create more complex programs and utilise ways to simplify code to make programming more efficient?	Digital Literacy: Databases Can you use an excel spreadsheets for multiple uses? Information Technology and Digital Literacy: Consolidation Project PowerPoint Who are Grace Hopper, Bill Gates and Steve Wozniak and can you produce a PowerPoint presentation about them?
Year Six	Online Safety Can you explain how to use technology safely, respectfully and responsibly, and identify a range of ways to report concerns about content and contact? Digital Literacy: Animation Can you use IMOVIE to create and edit an animation for an audience?	Computer Science: Coding Can you create a programme using previously taught skills? Can you create a quiz using variables?	Digital Literacy: Spreadsheets Do you know how to use a spreadsheet to model a real-life situation and come up with solutions that can be applied to real life? Information Technology and Digital Literacy: Consolidation Project Can you use the digital literacy skills you have learnt this year to create an animation linked to the computing pioneers Alan Turing?

Computing Pioneers studied in each year group

Year One Jack Kilby American engineer Jack Kilby was one of the inventors of the integrated circuit. This invention revolutionized electronics. Personal computers would not be possible without the integrated circuit, a system of interconnected transistors on a single microchip.	Year Two Tim Berners Lee Sir Tim Berners-Lee is a very smart man who helped create the World Wide Web, which is like a big library on the internet where we can find pictures, videos, games, and fun facts. He made it so people all around the world can share and read things using computers. Thanks to him, we can use websites and learn new things every day!	Year Three Ada Lovelace and Charles Babbage Ada Lovelace was a 19th-century English mathematician and writer, best known for her work on Charles Babbage's Analytical Engine. She is often considered the first computer programmer, as she developed the first algorithm for a machine to be processed by a computer. Charles Babbage is primarily known for designing the first automatic digital computer, the Analytical Engine. He is also recognized for developing the Difference Engine, a mechanical calculator.
Year Four Hedy Lamarr and Radia Perlman Hedy Lamarr was an Austrian-American actress and inventor who pioneered the technology that would one day form the basis for today's Wi-Fi, GPS and Bluetooth communication systems. Radia Joy Perlman is an American computer programmer and network engineer. She is a major figure in assembling the networks and technology to enable what we now know as the Internet.	Year Five Bill Gates, Grace Hopper and Steve Wozniak Grace Hopper was an American computer scientist, mathematician, and United States Navy rear admiral. She was a pioneer of computer programming. Hopper was the first to devise the theory of machine-independent programming languages William Henry Gates III is an American businessman and philanthropist. A pioneer of the microcomputer revolution of the 1970s and 1980s, he co-founded the software company Microsoft in 1975 with his childhood friend Paul Allen. Steve Wozniak is an American technology entrepreneur, electrical engineer, computer programmer, philanthropist, and inventor. In 1976, he co-founded Apple Computer with his early business partner Steve Jobs.	Year Six Alan Turing Alan Turing was a British mathematician, logician, and computer scientist, widely regarded as one of the pioneers of modern computing. Born in 1912, Turing's work laid the foundation for the development of theoretical computer science. He is best known for his concept of the "Turing machine," an abstract mathematical model of computation that helped define what it means for a problem to be solvable. During World War II, Turing played a crucial role in breaking the German Enigma code, which significantly contributed to the Allied victory.

Teaching Sequence

- Prior Learning/Retrieval of previous knowledge
- Pupils complete the pre learning task for the unit of work.
- Pupils are introduced to the key vocabulary and key knowledge
- The teacher teaches the curriculum content for that aspect of the curriculum using retrieval practice/Metacognitive strategies
- The teacher formatively assesses the pupil's progress throughout the duration of the unit of work through marking/pupil discussion/pupil workbook evidence etc.
- One day each week the teacher makes explicit links across the curriculum in a specific Retrieval Practice session
 - Retrieval Practice Sessions are 30 minutes for pupils in KS1.
 - Retrieval Practice Sessions are 45 minutes for pupils in KS2.
 - Retrieval Practice pupil work is documented in a Retrieval Practice Book.

Retrieval Practice sessions incorporate aspects of the whole of the curriculum from that year group from different periods of time.

- Topics taught in a given term are regularly retrieved through lesson starters during the term it is being taught.
- Retrieval lessons on Tuesday mornings revisit learning from the previous term. For example, if The Titanic is taught in Autumn 1, it will be revisited in retrieval lessons during Autumn 2.
- Pupils complete a Green for Growth check at the end of the following term e.g. Titanic in history in Year 6 is taught in Autumn 1. Therefore, the Green for Growth Check takes place on a specified week in Autumn 2.
- Green for Growth checks are documented in the Retrieval Practice Book.
- Children are given specified periods of time to complete the Green for Growth Check:
Key Stage One - 20 minutes
Key Stage Two - 30 minutes
- The Teacher uses the evidence base (pupil workbook, pupil retrieval practice book, Green for Growth Check) to make a 'professional judgement' about a pupils attainment. The teacher inputs the data on to BROMCOM using the year group end points for that subject.
- In some subjects the assessment is based on a final, finished piece of work such as a musical performance (solo or ensemble), a sporting performance (e.g. dance, gymnastics) or competency in team games and tactics. Hand-written pre-learning tasks for these subjects would not be appropriate; however, pupils' musical or sporting competence is informally assessed by Bolton Music service and class teachers/Commando Joe coaches.

Curriculum Conversation/Retrieval Practice: Computing

Each half term the children are split into mixed year groups and all teachers lead a 'Curriculum Conversation.' This provides the children with the opportunity to share their learning with others and make connections between components. Children are therefore more likely to remember key knowledge in the long term. Our curriculum builds on prior learning and re-visits content, supporting the children to develop strong schemata.

- What is the purpose of computing within our curriculum?
- What types of knowledge are valued within computing? Do you know these?
- How do you develop theoretical and practical knowledge?
- Within the computing curriculum, what knowledge of computer science do you learn?
- How does your knowledge of algorithms increase in complexity?
- How does the curriculum enable you to 'get better' at programming?
- Do you understand the role of data in computer systems?
- What knowledge is it important for you to develop to create (spreadsheets/presentations/videos/images/animations)?
- How is your knowledge of how computers are used developed over time?
- How do your teachers ensure that you learn to use digital devices safely, efficiently and responsibly?
- How does your knowledge of e-safety build over time?
- Which bits of our curriculum (like concepts, ideas, vocabulary, etc.) are crucial to re-visit so that they are remembered?
- How does your teacher ensure you remember the most crucial content covered?
- How is the knowledge that you learn in each unit of work built on as you move through KS1 and KS2?
- Are there any computing-specific experiences linked to the curriculum that take place outside of computing lessons?
- Do you recognise that there may be people online who could make you feel sad, embarrassed or upset?
- Do you know what different events do in code?
- Do you know how to use the repeat command?
- Do you know how font size and style can affect the impact of a text?
- Do you know of some ways that information about people online can be used by others to make judgments about an individual?
- Do you know how to use flowcharts to test and debug a program?

Computing Knowledge Retrieval

Year One	Digital Citizenship: Online Safety Why do we need rules?	Digital Literacy: Music Planning Can you create/follow a sequence of sounds?	Computer Science: Coding Can you follow instructions to get an object from a start point to an end point?	Digital Literacy: Databases How many objects does each person have?	Information Technology Can you name the parts of the computer correctly?
Year Two	Digital Citizenship: Online Safety Can you identify your trusted adults?	Digital Literacy Can you create a piece artwork to explore a character's feelings?	Computer Science: Coding Can you use logical reasoning to predict the outcome of an algorithm?	Digital Literacy: Databases Can you use a pictogram to answer questions?	Information Technology Can you explain who the pioneers Jack Kilby and Robert Noyce are?
Year Three	Digital Citizenship: Online Safety What is a digital foot print?	Digital Literacy Can you use create two pictures using 2paint using different styles?	Computer Science: Coding What does it mean to debug a computer program?	Digital Literacy: Databases What is the difference between binary and non-binary trees?	Information Technology Who is Time Berners Lee?
Year Four	Digital Citizenship: Online Safety Explain how people can represent themselves in different ways online. How can people change their identity online?	Digital Literacy: Making Music List what the main elements of music are.	Computer Science: Coding What is a flowchart and how flowcharts are used in computer programming?	Digital Literacy: Databases Explain what a branching database is used for.	Information Technology and Digital Literacy consolidation: Computer networks and Information pages. List the tools needed/included when creating an information page.
Year Five	Digital Citizenship: Online Safety What are spam messages/mail and malware?	Digital Literacy: Animation What is stop motion and can you create a flick book animation?	Computer Science: Coding What is a loop/repeat and how can that benefit our coding?	Digital Literacy: Spreadsheets How can you use a formula within a spreadsheet?	Information Technology and Digital Literacy consolidation How do you assess a sources reliability?
Year Six	Digital Citizenship: Online Safety How to block abusive users?	Digital Literacy: CAD Can you create a CAD on 2design?	Computer Science: Coding What is a string in code and can you create on?	Digital Literacy: Spreadsheets Can you create a graph using database data?	Information Technology and Digital Literacy consolidation Who is Bill Gates?

End Point Progression in Computing

EYFS Computing End Points What will the children be able to know and do?

Nursery

Personal, Social and Emotional Development

- Remember rules without needing an adult to remind them.

Physical Development

- Match their developing physical skills to tasks and activities in the setting.

Mathematics

- Solve real world mathematical problems with numbers up to 5.
- Discuss routes and locations, using words like 'in front of' and 'behind'.
- Notice and correct an error in a repeating pattern.
- Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then'.

Understanding the world

- Explore how things work.

Reception

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 and Design

Creating with Materials

Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

KS1 Computing End Points

What will the children be able to know and do?

Year One

Digital Citizenship	Information Technology	Digital Literacy	Computer Science
Know how to create an avatar and understand why they are used. Know how to behave online. Know who my trusted adults are. Describe how to behave online in ways that do not upset others and can give examples. Explain rules to keep us safe when we are using technology both in and beyond the home. Describe what information I should not put online without asking a trusted adult first.	Know examples of where technology is used in the local community. Know what technology is used in the local community. Know what a browser is. (Google kids / Yahoo Kids) Give simple examples of how to find information (e.g. search engine, browsers, voice activated searching). Identify the icons for applications on the desktop and launch accordingly. Open a browser. Record examples of technology outside school.	Music Planning Know that music can be used to express feelings and create tunes which depict feelings. Know what happens to the tune when sounds are moved. Explore sounds in a music programme or sound app. Make music digitally using 2Sequence. Explore, edit and combine sounds using 2Sequence. Pictograms Know that data can be represented in picture format. Know and understand what a pictogram is and what it can be used for. Know how to interpret the data on a pictogram. Create a pictogram by entering data into a simple graphing package. Use a pictogram to answer simple questions. Use a pictogram to record the results of an experiment. 2 Publish - Typing Skills Know the main keys for typing e.g. shift, space bar, full stop. Know how to make text bold/ italics / text alignment etc. Input text and images using a simple publishing programs (2Publish). Type a simple sentence on the screen, making use of a word bank. Format my typing in a number of ways (size, colour, font). Move to different places in the text using the arrow keys or mouse. Use the 'undo' icon to fix a mistake.	Know that an algorithm is a precise, step-by-step set of instructions used to solve a problem or achieve an objective. Know how to arrange code blocks to create a set of instructions/simple program. Know how to use code to make the program they have designed work. Give and follow instructions, which include straight and / or turning commands – one at a time. Plan and create a simple program/algorithm. Debug a simple program that is causing an unexpected outcome with support. Predict if a simple program will fulfil my algorithm. Create a program using code block. Use event, object and action code blocks.

KS1 Computing End Points

What will the children be able to know and do?

Year Two

Digital Citizenship	Information Technology	Digital Literacy	Computer Science
Know that I have the right to say 'no' or say 'I will have to ask someone'. Know who can help me if I feel under pressure to agree to something I am unsure about or don't want to do. Know ways to ask for, give or deny my permission online and identify who can help me if I am not sure. Explain how it makes others feel if I do not ask their permission or ignore their answers before sharing something about them online. Talk about how anyone experiencing bullying can get help. Talk about what bullying is, how people may bully others and how bullying can make someone feel and that they are not to blame. Talk about digital footprint and explain how other people may look and act differently online and offline. Give examples of issues online that might make me feel sad, worried, uncomfortable or frightened; I can give examples of how I might get help	Know who Sir Tim Bernes Lee is and recognise a picture of the pioneer. Know how to navigate a simple webpage to get information I need (home, forward, back buttons, links, tabs and sections) Know why other people's work belongs to them. Know what voice activated search is and how it might be used, and how it is not a real person (e.g. Alexa, Google Now, Siri) Know that some people may have devices in their homes connected to the internet and give examples (e.g. lights, fridges, toys, televisions) Know the browsers list: Yahoo kids, Google kids, Dib Dab Doo, Dilly Doo and Swisle. Describe and give examples of what is meant by 'private' and 'keeping things private.' Explain and use rules for keeping personal information private (e.g. creating and protecting passwords) Talk about the differences between the school network and a home computer set up.	Creating Pictures Know that 2Paint A Picture can be used to create art based upon impressionist art, pointillism, art Nouveau and Modernism. Know how to give your artwork a title and sign it. Create art using 2Panint a Picture including impressionist art, pointillism and modernism. To use the following tools: •Dilute colour tool to give a watered-down effect. •Scale tool to change the thickness of brush strokes. •Outline button to resize and reposition images. •Line template and fill in tool. •eCollage to create a stamp. •Eraser tool Use the size slider to change how big a pattern is and how often it is to repeat. Save work in the My Folder with an appropriate name when you have finished. Questioning Know how data handling tools can give more information than pictograms Know the difference between binary and non-binary data. Use yes/no questions to separate information. Construct a binary tree to identify items. Use 2Question (a binary tree database) to answer questions Use the Search tool to find information. Use a database to answer more complex search questions	Know what an event is and that programs need an event to begin. Know that computers need precise instructions. Know what the following are: Collision detection Timer Object types Function of buttons Give and follow instructions, which include direction and turning command – several in order. Plan and use logical reasoning to predict outcomes. Create a program that contains several commands for a device or software programme. Use the tools: Collision detection Using a timer Object types Use function buttons Debug a program independently that has caused an unexpected outcome.

Lower KS2 Computing End Points
What will the children be able to know and do?
Year Three

Digital Citizenship

Know that children mostly communicate online through games, videos and apps.
 Know why some online activities have age restrictions
 Know about the difference between trusting and liking someone online.
 Know where online bullying can take place and what it might look like.
 Explain how I can represent myself in different ways online.
 Explain some risks of communicating online with others I don't know well.
 Explain why spending too much time using technology can sometimes have a negative impact on me.

Information Technology

Know how to use key phrases in search engines to gather accurate information
 Know how to create a folder to save work in
 Know the difference between a belief, opinion and fact and give examples of how and where they may be shared online
 Describe how to effectively use a search engine and what key phrases are
 Create a folder to save work in
 Give a file a name to identify it
 Explain the differences between a belief, fact and opinion

Digital Literacy

Making Music
 Know how to use creative multimedia
 Know how to use the keyboard to create a musical composition
 Know what melodic phrases are
 Know what happens when you change the pitch of a musical note
 Explain what a musical composition is
 Describe what happens when you change the tempo of a melody
 Describe what happens when you change the pitch in a piece of music
Databases
 Know how to use a spreadsheet program to automatically create charts and graphs from data.
 Know how to use the 'more than', 'less than' and 'equals' tools to compare different numbers and work out solutions to calculations.
 Know how to enter and describe a cell location in a spreadsheet using the notation of a letter for the column followed by a number for the row.
 Create graphs and charts from data
 Enter data onto a spreadsheet
 Describe a cell location in a spreadsheet.
 Complete a branching database.
 Debug a branching database.
 Use inequality symbols < > =
 Use the spin tool
Word - Typing skills
 Know how to type a number of sentences using a keyboard using word
 Know simple keyboard shortcuts Ctrl + B, I, U to edit my text style
 Know how to cut, copy and paste to re-order text
 Know how to indent with text to show paragraphs
 Use a keyboard to write sentences to create an information page using word
 Use cut, copy and paste when typing text

Computer Science

Know how to create a program that uses a timer-after/ timer-every command.
 Know how to create a computer program that includes use of the repeat command.
 Know how to use nesting when debugging your programs.
 Know how to plan a scene and code before you create your program.
 Use logical reasoning to explain what will happen next.
 Solve problems by decomposing them into smaller parts.
 Detect and debug errors in algorithms and programs.
 Know that if I change the sequence I may change the outcome of the program

Lower KS2 Computing End Points
What will the children be able to know and do?

Year Four

Digital Citizenship	Information Technology		Computer Science
Know that HTTPS and cookies, protect you online. Know about the risks posed by over-sharing information online. Know what plagiarism is. Know how to take ownership of the way that you choose to use your free time. Know the positive and negative effects of using technology. Describe strategies for safe and fun experiences in a range of online social environments. Identify spam mail and messages. Explain what malware means. Describe the difference between bullying online and bullying offline.	Know how to make notes as you go through the webpages. Know what the advantages and disadvantages are of using a computer. Know why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true. Describe what a URL (web address) is. Use Google and Safari. Explain that internet use is never fully private and is monitored, e.g. adult supervision. Describe how to search for information. Locate information on the search results page. Assess whether an information source is true and reliable	Animations Know how to use the Onion Skin tool to create an animated image. Know how to use backgrounds and sounds to make imaginative animations. Know how to use ideas from existing 'stop motion' films to recreate your own. Take a series of pictures to form an animation. Save my animation at different stages to compare my work and talk about the changes. Edit animation by cropping clips. Spreadsheets Know how to decide on the most appropriate form of graph for a data set and give reasons for my choice. Know how to interpret graphs of data collected from sensors. Know how to add basic mathematical formulas. Know how to use SUM to calculate the total of a set of numbers in a range of cells. Know how to change the look of a spreadsheet by using different formats e.g. text styles, colour, number format included: currency and date, row and column heights. Know how to insert and delete columns and rows in a spreadsheet. Format cells as currency, percentage, decimal to different decimal places or fraction. Use the formula wizard to calculate averages. Add a formula to a cell to automatically make a calculation in that cell. Explore the use of the timer, random number and spin button tools. Use the currency formatting tool in 2Calculate. Use 2Calculate to create a model of a real-life situation.	Know how an IF statement works. Know how an ELSE statement works. Know the difference between an algorithm and a program. Know how to input simple instructions in Logo. Know that a repeat / loop is used to repeat a set of instructions. Know how to create and use variables when programming. Understand selection in computer programming. Use coordinates in computer programming. Understand selection in computer programming. Use a number variable. Use sequence and loops (repetition) in programs confidently. Transfer my coding skills between 2 programs. Explain why it is important to use 'loops/repeat' in particular place in my sequence. Use and build procedures.

Upper KS2 Computing End Points

What will the children be able to know and do?

Year Five

Digital Citizenship	Information Technology	Digital Literacy	Computer Science
Know how image manipulation could be used to upset either you or other users. Know how to think critically about what you share online, even when asked by a usually reliable person to share something. Know how to block abusive users. Know different forms of technology-specific forms of communication. Know what in-app purchases are and the importance of having permission to buy these. Describe ways that information about people online can be used by others to make judgments about an individual. Describe how to get help for someone that is being bullied online and assess when I need to do or say something or tell someone. Explain how to block abusive users. Describe the helpline services who can support me and what I would say and do if I needed their help (e.g. Childline / CEOP). Identify times and situations when I might need to limit the amount of time I use Technology.	Know what an operating system is and why it is important. Know the key components and internal parts of a computer. Explain what is meant by being sceptical about information online. Assess and justify when it is acceptable to use the work of others. Give examples of content that is permitted to be reused and know how this content can be found online. Explain the benefits and limitations of using different types of search technologies. Explain what is meant by the term 'stereotype', how 'stereotypes' are amplified and reinforced online, and why accepting stereotypes may influence how people think about others. Identify ways the internet can draw us to information for different agendas, e.g. website notifications, pop-ups, targeted ads.	3D Modelling Know how to adapt a vehicle model by moving the points to alter the shape of the vehicle while still maintaining its form. Know how to edit the polygon 3D models to design a 3D model for a purpose. Know how to refine one of your designs to prepare it for printing. Know how to print your design as a 2D net and then create a 3D model. Know how to review and edit work. Know whether or not work is suitable for the intended audience. Design a 3D model using ICT to meet a specific goal, e.g. 2Design & Make. Evaluate and improve 3D model designs. Explore and discuss the possibilities of 3D printing in the future. Databases Know how to search a database to answer questions correctly. To know what a database field is and correctly add field information Know how to contribute to a class database. Create a database structure and enter the data Prepare a data collection form and collect quality information Use database tools to create a graph that displays information clearly Interpret graphs of data collected from a variety of sources Understand how questions can be appropriately worded to receive and effective answer using a database. PowerPoint – Typing Skills Know what Microsoft PowerPoint is and its purpose. Know how to present information appropriately and effectively. Design an informative Microsoft PowerPoint presentation. Deliver a presentation about a computing pioneer.	Know how to select the right images to reflect the simulation you are making. Know how to create a program which represents a physical system. Know of some ways that text variables can be used in coding. Know how to create and use strings in a program. Know that concatenation means linking a mixture of strings, variable values and numbers together in a series. Know what a simulation is. Know what decomposition and abstraction are within computer science. Know what friction is. Explain what a conditional/selection is Detect and debug errors in more complex algorithms and programs Use selection to create games in which the user must make a choice Program a simulation using 2Code. Use decomposition to make a plan of a real life situation. Create a string within code. Transfer coding skills between software.

Upper KS2 Computing End Points
What will the children be able to know and do?
Year Six

Digital Citizenship	Information Technology	Digital Literacy	Computer Science
Know that what you share impacts upon yourself and upon others. Know about technology's capacities to create effective positive profiles. Know about the impact of technology and bullying and other types of online aggression. Explain what a digital footprint is. Challenge and explain why it is important to reject inappropriate messages about gender, race or disability online. Demonstrate ways of reporting problems online for both my friends and myself. Describe how to capture bullying content as evidence (e.g. screengrab, URL, profile to share with others who can help me). Assess, action and implement different strategies to self-regulate my use of technology (e.g. night mode, correct posture and sleep/diet)	Know how search engines work and how results are selected. Know the purpose of persuasive design. Know how to make references to and acknowledge sources I have used from the interest. Identify, flag and report inappropriate content. Demonstrate the use of search tools to find and access online content. Save and retrieve work from different places. Cite references to avoid copyright.	iMovie Know how to present on IMOVIE. Know how to review and edit my work and talk about the changes I have made. Know how to consider whether my work is suitable for the audience and if not know how to adapt to make it suitable. Create a film using short clips. Export/embed a video in different formats. Evaluate and improve video clips. Consider the effect of camera angles, light and shadow when filming. Add titles, credits, transitions and special effects. Review and add to, replace and edit clips to make messages clearer. Excel Know formulae can be used to present data in a variety of ways e.g percentages, graphs, and charts. Navigate around the front screen of their chosen program. Use appropriate cell references. Enter data into cells. Define what is meant by formula. Write simple formula related to the rules of calculations. Use the series fill function. Use formulae to change calculations automatically.	Know how to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Know how to solve problems by decomposing them into smaller parts. Know how to use sequence, selection, and repetition in programs, work with variables and various forms of input and output. Know of the 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. Explain what a variable is. Confidently use events, repeats, selection and variables. Use a variable in a variety of programming software. Confidently decompose a problem and methodically create a program to solve it, testing and adapting as I go. Evaluate the effectiveness of my programming and suggest improvements. Confidently use the Blockly programming language.

Progress in computing

Digital Citizenship	Information Technology	Digital Literacy	Computer Science
Children need to examine the consequences of their online activity—both good and bad. When teaching Digital Citizenship, it is vital that we thoroughly embed the principles of staying safe online and then move onto web content and how our pupils interact with it. It is important to use real world examples with our children to ensure that their learning is relevant to their life experiences.	This is how we interface with technology using existing hardware. We need to teach children how to navigate around a variety of devices, type, save work, find and move files. In addition, pupils need to understand the internet and the web, use search engines, understand networks and generally be efficient and independent users of a range of technologies.	Digital Literacy, is essentially how to use a whole host of different software. Having high levels of Digital Literacy enables us to decide which software we need to complete any given task, how to transfer skills and ultimately, be confident when using software. The essential component of digital literacy when it comes to the field of pedagogy is deep learning; of which there are six core skills: ▪ Collaboration ▪ Creativity ▪ Critical thinking ▪ Citizenship ▪ Character Traits ▪ Communication	Computer science has been deemed as important to the school curriculum because of its potential to teach children Computational Thinking or how to think. Computational Thinking can teach pupils how to be successful with design, logical reasoning, problem solving and resilience - all valuable well beyond the computer science classroom. The ability to create and adapt new technologies distinguishes computer science from computer literacy.

	EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Digital Citizenship	Nursery Solve real world mathematical problems with numbers up to 5. Discuss routes and locations, using words like 'in front of' and 'behind'. Notice and correct an error in a repeating pattern. Begin to describe a sequence of events, real or fictional, using	Know that there may be people online who could make me feel sad, embarrassed, or upset. Know that information can stay online and could be copied. Know how to create an avatar and understand why they are used. Know how to behave online. Know who my trusted adults are. Talk about my digital footprint.	Know how someone might use technology to communicate with others they don't know and explain why this might be risky. Know that I have the right to say 'no' or say 'I will have to ask someone'. Know who can help me if I feel under pressure to agree to something I am unsure about or don't want to do.	Know that children mostly communicate online through games, videos and apps. Know what information you can/should share and with whom. Know why some online activities have age restrictions. Know how people can represent themselves in different ways online. Know that when people talk online, it is different	Know that HTTPS and cookies, protect you online. Know what a digital footprint is and how it relates to identity theft. Know about the risks posed by over-sharing information online. Know what plagiarism is. Know how to take ownership of the way that you choose to use your free time.	Know how image manipulation could be used to upset either you or other users. Know how to think critically about what you share online, even when asked by a usually reliable person to share something. Know how to block abusive users. Know of a range of ways to report concerns both inside and outside pf	Know that what you share impacts upon yourself and upon others. Know about technology's capacities to create effective positive profiles. Know about the impact of technology and bullying and other types of online aggression. Know of different reasons to limit screen time. Know about the positive and negative aspects of technology.

	words such as 'first', 'then'. Explore how things work. Match their developing physical skills to tasks and activities in the setting. Reception 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. Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Give examples of when and how to speak to an adult I can trust. (Butterfly feeling) Explain why it is important to be kind to people online and to respect their choices. Describe how to behave online in ways that do not upset others and can give examples. Explain rules to keep us safe when we are using technology both in and beyond the home. Give examples of when I should ask permission to do something online and explain why this is important. Use the internet with adult support to communicate with people I know. Describe what information I should not put online without asking a trusted adult first.	Know who can help me if something happens online without my consent. Know ways to ask for, give or deny my permission online and identify who can help me if I am not sure. Explain who I should ask before sharing things about myself or others online. Explain how it makes others feel if I do not ask their permission or ignore their answers before sharing something about them online. Explain how anyone's online information could be seen by others. Explain why I should always ask a trusted adult before clicking yes, agree or accept. Explain how information put online about me can last for a long time. Talk about how anyone experiencing bullying can get help. Talk about what bullying is, how people may bully others and how bullying can make someone feel and that they are not to blame. Talk about digital footprint and explain how other people may look and act differently online and offline. Explain simple guidance for using technology in different environments and settings. Give examples of issues online that might make me feel sad, worried, uncomfortable or	to communicating face to face. Know about the difference between trusting and liking someone online. Know where online bullying can take place and what it might look like. Explain how I can represent myself in different ways online. Explain some risks of communicating online with others I don't know well. Search for information about myself online. Describe rules about how to behave online and how I follow them. Explain why spending too much time using technology can sometimes have a negative impact on me.	Know the positive and negative effects of using technology. Describe strategies for safe and fun experiences in a range of online social environments. Describe how others can find out information about me by looking online. Identify spam mail and messages. Explain what malware means. Describe the difference between bullying online and bullying offline.	school about online bullying. Know different forms of technology-specific forms of communication. Know what in-app purchases are and the importance of having permission to buy these. Demonstrate responsible choices about my online identity, depending on context. Describe ways that information about people online can be used by others to make judgments about an individual. Describe how to get help for someone that is being bullied online and assess when I need to do or say something or tell someone. Explain how to block abusive users. Describe the helpline services who can support me and what I would say and do if I needed their help (e.g. Childline / CEOP). Identify times and situations when I might need to limit the amount of time I use Technology.	Explain what a digital footprint is. Challenge and explain why it is important to reject inappropriate messages about gender, race or disability online. Demonstrate ways of reporting problems online for both my friends and myself. Describe how to capture bullying content as evidence (e.g. screengrab, URL, profile to share with others who can help me). Assess, action and implement different strategies to self-regulate my use of technology (e.g. night mode, correct posture and sleep/diet)
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			frightened; I can give examples of how I might get help.				
Information Technology	Nursery Remember rules without needing an adult to remind them. Explore how things work. Reception 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. Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Know examples of where technology is used in the local community. Know what technology is used in the local community. Know how to get help from a trusted adult if we see content that makes us feel sad, uncomfortable worried or frightened. (Butterfly feeling). Know how passwords can be used to protect information and devices. Know that work created by others does not belong to me even if I save a copy. Know what a browser is. (Google kids / Yahoo Kids) Give simple examples of how to find information (e.g. search engine, browsers, voice activated searching). Recognise more detailed examples of information that is personal to someone (e.g. where I live, my family's names, where I go to school). Explain why work I create using technology belongs to me. Save my work (purple mash) so that others know it belongs to me (e.g. filename, name on content). State why it belongs to me (e.g. 'it is my idea' or 'I designed it'). Identify the icons for applications on the desktop and launch accordingly. Open a browser.	Know who Sir Tim Bernes Lee is and recognise a picture of the pioneer. Know how to navigate a simple webpage to get information I need (home, forward, back buttons, links, tabs and sections) Know the difference between things that are imaginary, 'made up' or 'make believe' and things that are 'true' or 'real'. Know that the content on the internet may belong to other people. Know why other people's work belongs to them. Know what voice activated search is and how it might be used, and how it is not a real person (e.g. Alexa, Google Now, Siri) Know that some people may have devices in their homes connected to the internet and give examples (e.g. lights, fridges, toys, televisions) Know there is a difference between physical, wireless and mobile networks. Know the browsers list: Yahoo kids, Google kids, Dib Dab Doo, Dilly Doo and Swisle. Use simple keywords in search engines. Explain how passwords can be used to protect information, accounts and devices. Describe and give examples of what is meant by 'private' and 'keeping things private.'	Know how to use key phrases in search engines to gather accurate information-Google kids, Yahoo Kids, Kiddie for Kids and Dilly Do Know the difference between a belief, opinion and fact and give examples of how and where they may be shared online Know how to create a folder to save work in Describe how to effectively use a search engine and what key phrases are Create a folder to save work in Give a file a name to identify it Explain the differences between a belief, fact and opinion	Know how to make notes as you go through the webpages. Know what the advantages and disadvantages are of using a computer. Know how to use search engines to search for information. Know why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true. Describe what a URL (web address) is. Use Google and Safari. Explain that internet use is never fully private and is monitored, e.g. adult supervision. Describe how to search for information. Locate information on the search results page. Assess whether an information source is true and reliable	Know what an operating system is and why it is important. Know the key components and internal parts of a computer. Know who Grace Hopper, Bill Gates and Steve Wozniak are and what they contributed to the history of computing. Explain what is meant by being sceptical about information online. Evaluate digital content and explain which resources are trustworthy. Assess and justify when it is acceptable to use the work of others. Give examples of content that is permitted to be reused and know how this content can be found online. Explain the benefits and limitations of using different types of search technologies. Explain key concepts including information, reviews, fact, opinion, belief, validity, reliability and evidence. Explain what is meant by the term 'stereotype', how 'stereotypes' are amplified and reinforced online, and why accepting stereotypes may influence how people think about others. Describe how fake news may affect someone's emotions and behaviour and explain why this may be harmful.	Information Technology: Know how search engines work and how results are selected. Know the purpose of persuasive design. Know how to make references to and acknowledge sources I have used from the interest. Information Technology: Identify, flag and report inappropriate content. Demonstrate the use of search tools to find and access online content. Save and retrieve work from different places. Cite references to avoid copyright.

		Log on and off the school network using my individual username and password. Record examples of technology outside school.	Explain and use rules for keeping personal information private (e.g. creating and protecting passwords) Log on and off the school network using individual username and password and save work to Purple mash or the school network. Talk about the differences between the school network and a home computer set up.			Identify ways the internet can draw us to information for different agendas, e.g. website notifications, pop-ups, targeted ads. Evaluate website and web content effectively. Use Google and Safari as search engines.	
Digital Literacy Autumn 2	Nursery Solve real world mathematical problems with numbers up to 5. Discuss routes and locations, using words like 'in front of' and 'behind'. Notice and correct an error in a repeating pattern. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then'. Explore how things work. Match their developing physical skills to tasks and activities in the setting. Reception Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. Explain the reasons for rules, know right	Music Planning Know what 2Sequence is and how it works. Know that music can be used to express feelings and create tunes which depict feelings. Know what happens to the tune when sounds are moved. Explore sounds in a music programme or sound app. Make music digitally using 2Sequence. Explore, edit and combine sounds using 2Sequence. Edit and refine composed music. Upload a sound from a bank of sounds into the Sounds section. Record and upload environmental sounds into Purple Mash. Use these sounds to create tunes in 2Sequence. Explore how to speed up and slow down tunes. Add sounds to a tune they have already created to change it. Change the volume of the background sounds	Creating Pictures Know that 2Paint A Picture can be used to create art based upon impressionist art, pointillism, art Nouveau and Modernism Know that there are different tools: •Dilute colour tool to give a watered down effect. •Scale tool to change the thickness of brush strokes. •Outline button to resize and reposition images. •Line template and fill in tool. •eCollege to create a stamp. •Eraser tool Know how to give your artwork a title and sign it. Create art using 2Paint A Picture including impressionist art, pointillism and modernism. To use the following tools: •Dilute colour tool to give a watered down effect. •Scale tool to change the thickness of brush strokes. •Outline button to resize and reposition images. •Line template and fill in tool.	Making Music Know how to use creative multimedia Know what basic musical notation is and how it works Know how to use the keyboard to create a musical composition Know what melodic phrases are Know what happens when you change the pitch of a musical note Know what happens when you change the tempo of music Explain what a musical composition is Describe what happens when you change the tempo of a melody Describe what happens when you change the pitch in a piece of music Describe what happens when you change the dynamics of a piece of music Explain what a melodic phrase is	Animation Know how to make a simple animation using paper to create a flick book. Know how to use the Onion Skin tool to create an animated image. Know how to use backgrounds and sounds to make imaginative animations. Know how to use ideas from existing 'stop motion' films to recreate your own. Select appropriate tools to add emphasis and effect to my work; ▪ onion skin ▪ add/delete frame ▪ background ▪ camera – add photo ▪ add sound ▪ add video ▪ add shapes, text, drawings Take a series of pictures to form an animation. Save my animation at different stages to compare my work and talk about the changes. Edit animation by cropping clips.	3D Modelling Know what the 2Design and make tool is for. Know how to spin the model in different directions. Know how to adapt a vehicle model by moving the points to alter the shape of the vehicle while still maintaining its form. Know how to edit the polygon 3D models to design a 3D model for a purpose. Know how to refine one of your designs to prepare it for printing. Know how to print your design as a 2D net and then create a 3D model. Know how to review and edit work. Know whether or not work is suitable for the intended audience. Select appropriate tools to add emphasis and effect to my work; • 2D Image (points view) • 3D image • Net view • Colour palette	iMovie - video Know how to present on IMOVIE. Know how to select appropriate tools to add emphasis and effect to my work. Know how to review and edit my work and talk about the changes I have made. Know how to consider whether my work is suitable for the audience and if not know how to adapt to make it suitable. Create a film using short clips. Export/embed a video in different formats. Evaluate and improve video clips. Consider the effect of camera angles, light and shadow when filming. Add titles, credits, transitions and special effects. Review and add to, replace and edit clips to make messages clearer. Use a range of tools to create animation: ▪ add/delete frame ▪ background

	from wrong and try to behave accordingly. Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Select and use the appropriate tools to complete my work: 2Sequence - Open, save and share - Change the temp - Loop/unloop - Play - Sound types - Add/Delete sounds - Volume controls - Record - Listen	- eCollage to create a stamp. - Eraser tool Use various painting effects and combine these effects to make pictures. Use colour and mix it with water to give it a watered down effect. Use scale to change the size of brushstrokes. Use the outline button to resize and reposition images. Use the line template and fill tool to fill an enclosed area and change the thickness of line. Use eCollage to create a stamp that can be placed on a picture. Use the size slider to change how big a pattern is and how often it is to repeat. Save work in the My Folder with an appropriate name when you have finished.		Choose appropriate scene transitions.	- Clear, undo and redo - Magnify - Pattern fill Design a 3D model using ICT to meet a specific goal, e.g. 2Design & Make. Evaluate multimedia pages, such as Wiki entries, websites and blogs, and recognise the features of good page design and how it is suited to an audience. Evaluate and improve 3D model designs. Explore and discuss the possibilities of 3D printing in the future. Explore and utilise different viewpoints within 2Design and Make.	- credits - fade - camera – add photos and clips - add sound - add video - add shapes, text, drawings
Digital Literacy Summer 1	Nursery Solve real world mathematical problems with numbers up to 5. Discuss routes and locations, using words like ‘in front of’ and ‘behind’. Notice and correct an error in a repeating pattern. Begin to describe a sequence of events, real or fictional, using words such as ‘first’, ‘then’. Explore how things work.	Pictograms Know how to find/save work into the My Work folder in Purple Mash. Know the different tools on Purple Mash and know some of the key icons. Know how to log in/out of Purple Mash. Know how to find information (e.g. search engine, browsers, voice activated searching). Know that data can be represented in picture format. Know and understand what a pictogram is and what it can be used for.	Questioning Know how data handling tools can give more information than pictograms. Know the difference between binary and non-binary data. Use yes/no questions to separate information. Construct a binary tree to identify items. Use 2Question (a binary tree database) to answer questions. Use the Search tool to find information.	Databases Know how to use a spreadsheet program to automatically create charts and graphs from data. Know how to use the ‘more than’, ‘less than’ and ‘equals’ tools to compare different numbers and work out solutions to calculations. Know how to enter and describe a cell location in a spreadsheet using the notation of a letter for the column followed by a number for the row.	Spreadsheets Know how to decide on the most appropriate form of graph for a data set and give reasons for my choice. Know how to interpret graphs of data collected from sensors. Know how to add basic mathematical formulas. Know how to use SUM to calculate the total of a set of numbers in a range of cells. Know how to change the look of a spreadsheet by using different formats e.g. text styles, colour,	Databases Know what a database is. Know how to search a database to answer questions correctly. To know what a database field is and correctly add field information. Know what an avatar is and why it is important. Know how to contribute to a class database. Create a database structure and enter the data. Prepare a data collection form and collect quality information	Spreadsheets Know the key features of a spreadsheet and how data can be entered into cells. Know formulae can be entered into a spreadsheet and how this can save time. Know that a spreadsheet can be used to model a situation. Know that Excel can make complex data clear by manipulating the way it is presented. Know formulae can be used to present data in a variety of ways e.g.

	Match their developing physical skills to tasks and activities in the setting. Reception 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. Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Know how to interpret the data on a pictogram. Create a pictogram by entering data into a simple graphing package. Use a pictogram to answer simple questions. Contribute to a class pictogram. Use a pictogram to record the results of an experiment. Select and use the appropriate tools to complete my work: ▪ 2Count ▪ Open, Close and Share ▪ Add or delete columns ▪ Frequency ▪ Add/ delete objects	Use a database to answer more complex search questions.	Know how to use YES/NO questioning to play a simple game with a friend. Understand why you chose a particular question to split your database. Know how to use and debug their own and others branching databases. Create graphs and charts from data Use the data to answer questions Enter data onto a spreadsheet Describe a cell location in a spreadsheet. Complete a branching database. Debug a branching database. Use inequality symbols < > = Use the spin tool Use tools: • More than > • Less than < • Equals = • Spin tool 2Question	number format included: currency and date, row and column heights. Know how to insert and delete columns and rows in a spreadsheet. Format cells as currency, percentage, decimal to different decimal places or fraction. Use the formula wizard to calculate averages. Add a formula to a cell to automatically make a calculation in that cell. Explore the use of the timer, random number and spin button tools. Use the currency formatting tool in 2Calculate. Use 2Calculate to create a model of a real-life situation. Use tools; ▪ Formula Wizard ▪ Equal to tool ▪ Spinner tool ▪ Timer ▪ Random number tool ▪ Percentages ▪ Format cell ▪ Averages ▪ Decimal place ▪ Copy, cut and paste ▪ Resize	Use database tools to create a graph that displays information clearly. Decide on the most appropriate form of graph for a data set giving reasons for the choice Interpret graphs of data collected from a variety of sources Understand how questions can be appropriately worded to receive and effective answer using a database. Use tools; • Open, close or share a file • Design a new database • Add a record to the database • Find information in a database • Sort, group and arrange information • Statistics and reports • Charts	percentages, graphs, and charts. Talk about the use of spreadsheets. Navigate around the front screen of their chosen program. Use appropriate cell references. Enter data into cells. Define what is meant by formula. Write simple formula related to the rules of calculations. Use the series fill function. Use formulae to change calculations automatically. Use the sum feature when typing a formula. Format cells as currency.
Typing skills Typing skills are covered in each year group however they are specifically taught in Year 1, 3 and 5.		2Publish Know the main keys for typing e.g. shift, space bar, full stop. Know how to make text bold/ italics / text alignment etc. Input text and images using a simple publishing programs (2Publish). Type a simple sentence on the screen, making use of a word bank.		Word Know how to type a number of sentences using a keyboard using word Know simple keyboard shortcuts Ctrl + B, I, U to edit my text style Know how to cut, copy and paste to re-order text Know how to indent with text to show paragraphs Use a keyboard to write sentences to create an		PowerPoint Know what Microsoft PowerPoint is and its purpose. Know how to present information appropriately and effectively. Design an informative Microsoft PowerPoint presentation. Deliver a presentation about a computing pioneer.	

		Format my typing in a number of ways (size, colour, font). Move to different places in the text using the arrow keys or mouse. Use the 'undo' icon to fix a mistake.		information page using word Use cut, copy and paste when typing text			
Computer Science	Nursery Solve real world mathematical problems with numbers up to 5. Discuss routes and locations, using words like 'in front of' and 'behind'. Notice and correct an error in a repeating pattern. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then'. Explore how things work. Match their developing physical skills to tasks and activities in the setting. Reception 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. Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design,	Know that an algorithm is a precise, step-by-step set of instructions used to solve a problem or achieve an objective. Know how to draw symbols to represent instructions. Know how to arrange code blocks to create a set of instructions/simple program. Know how to use event, object and action code blocks. Know how to edit a scene by adding, deleting and moving objects. Know how to use code to make the program they have designed work. Give and follow instructions, which include straight and / or turning commands – one at a time. Plan and create a simple program/algorithm. Debug a simple program that is causing an unexpected outcome with support. Predict if a simple program will fulfil my algorithm. Break an algorithm down into smaller parts (decomposing / chunking). Create a program using code block. Use event, object and action code blocks.	Know what a program is. Know what an event is and that programs need an event to begin. Know that computers need precise instructions. Know what the following are: Collision detection Timer Object types Function of buttons. Give and follow instructions, which include direction and turning command – several in order. Plan and use logical reasoning to predict outcomes. Create a program that contains several commands for a device or software programme. Use the tools: Collision detection Using a timer Object types Use function buttons Debug a program independently that has caused an unexpected outcome. Use different events to start my programs – timing / on click / on button press.	Know how to create a computer program that uses click events and timers. Know how to create a program that uses a timer-after/ timer-every command. Know how to create a computer program that includes use of the repeat command. Know how to run, test and debug your programs. Know how to use nesting when debugging your programs. Know how to plan a scene and code before you create your program. Use logical reasoning to explain what will happen next. Solve problems by decomposing them into smaller parts. Detect and debug errors in algorithms and programs. Write a program to complete an algorithm Know that if I change the sequence I may change the outcome of the program Predict how a change in a sequence may impact on the outcome of a program	Know how an IF statement works. Know how an ELSE statement works. Know the difference between an algorithm and a program. Know how to create an algorithm for a scene. Know how to input simple instructions in Logo. Know that a repeat / loop is used to repeat a set of instructions. Know how to create and use variables when programming. Know how to predict an outcome. Understand selection in computer programming. Use coordinates in computer programming. Understand selection in computer programming. Use a number variable. Use sequence and loops (repetition) in programs confidently. Independently select and sequence code to make my own program. Detect and debug errors in algorithms and programs. Transfer my coding skills between 2 programs. Explain why it is important to use 'loops/repeat' in particular place in my sequence. Use and build procedures.	Know how to use variables in a code. Know how to select the right images to reflect the simulation you are making. Know how to create a program which represents a physical system. Know of some ways that text variables can be used in coding. Know how to create and use strings in a program. Know that concatenation means linking a mixture of strings, variable values and numbers together in a series. Know the skill learnt in previous year groups and how to implement them. Know that a repeat is used to repeat a set of instructions. Know what a simulation is. Know what decomposition and abstraction are within computer science. Know what friction is. Explain what a conditional/selection is Plan and write an algorithm using the following: commands, sequence, repetition and selection 'if...then' (conditional statement) Detect and debug errors in more complex algorithms and programs	Know how to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Know how to solve problems by decomposing them into smaller parts. Know how to use sequence, selection, and repetition in programs, work with variables and various forms of input and output. Know of the 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. Explain what a variable is. Confidently use events, repeats, selection and variables. Use a variable in a variety of programming software. Confidently decompose a problem and methodically create a program to solve it, testing and adapting as I go. Evaluate the effectiveness of my programming and suggest improvements. Confidently use the Blockly programming language.

	texture, form and function.					Use selection to create games in which the user must make a choice Program a simulation using 2Code. Use decomposition to make a plan of a real life situation. Create a string within code. Transfer coding skills between software.	
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Careers in Computing

At Brownlow our aim is to raise aspirations and support career related learning, helping children learn about the world around them broadening their aspirations and challenging stereotypes. There are so many varied pathways to a chosen career it's important that children recognise the opportunities that are available to them.

[hashtag#startsmalldreambig](#)

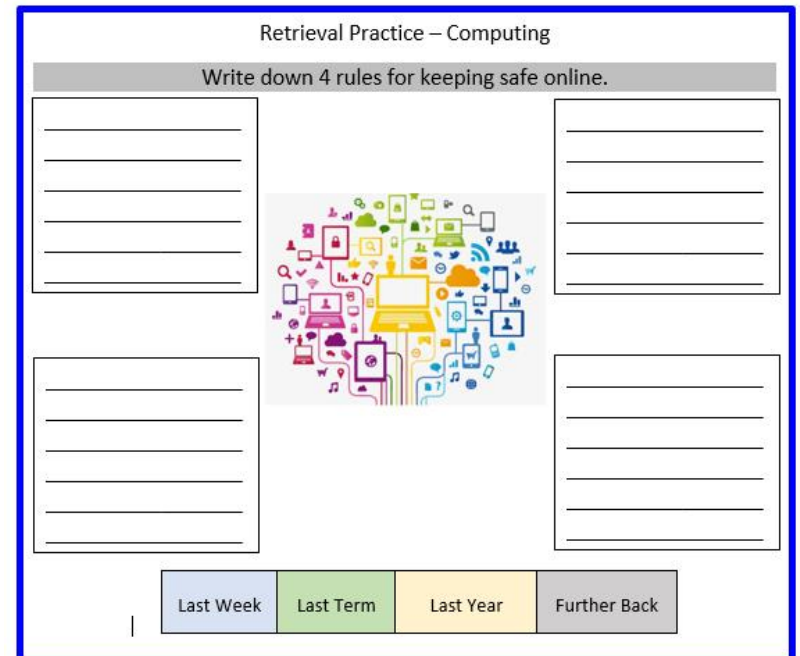
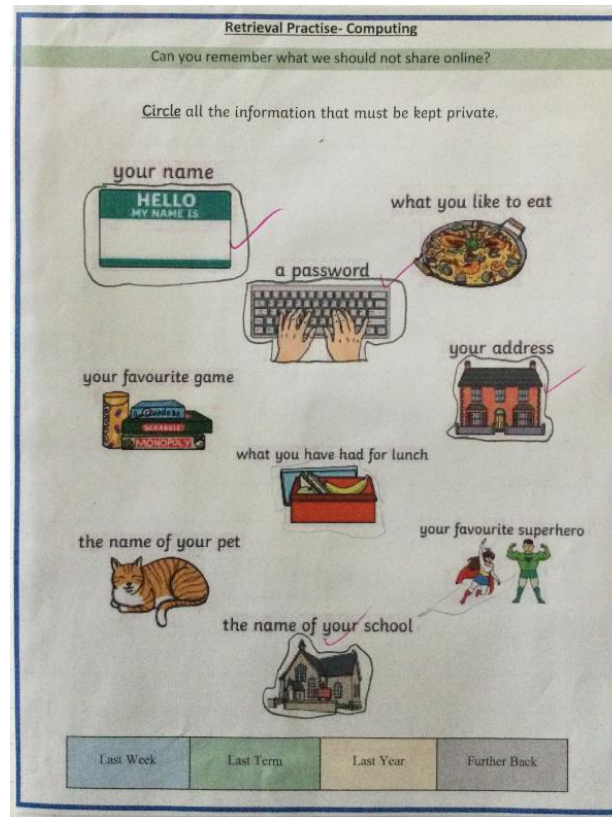


Retrieval Practice

Retrieval practice involves generating answers to questions about previously learnt information. Retrieval practice provides opportunities for pupils to practise applying the knowledge they have understood to consolidate understanding and strengthen recall.

For example, this could take the form of a past paper, a multiple-choice quiz or a verbal question and answer. This requires children recalling information that they have learned throughout the week, term, year, previous years and has several benefits:

- It helps the children make new connections
- It helps strengthen existing connections
- It is reliable under pressure
- It gets information into their long-term memory (which also makes it easier to learn new things)
- It provides a foundation for future learning as it prompts feedback



Empowered Learner in Computing

Each term the 'Empowered Learner' focus emphasises six areas of personal development. Throughout their time at Brownlow Fold all children are supported to become self-evaluative of their own strengths and areas for development. We recognise the impact that personal skills can have on the academic success and well-being of our children. They play a vital role in developing the ability of our pupils to enjoy and reflect on their learning across the curriculum.



Autumn One - Self Manager
Autumn Two - Effective Participators

Spring One - Resourceful Thinker
Spring Two - Reflective Learner

Summer One - Independent Enquirer
Summer Two - Team Worker

Self-Manager - In computing lessons our pupils anticipate, take and manage risks.

Effective Participator – Pupils actively propose practical ways forward during computing lessons.

Resourceful Thinker – Our pupils try different ways to tackle problems and explore and experiment with resources and materials.

Reflective Learner – In computing lessons pupils are encouraged to make changes to improve their learning.

Independent Enquirer – Pupils are able to gather, process and evaluate information in their investigations.

Team Worker – Computing lessons encourage pupils to form collaborative relationships, resolving issues and reaching agreed outcomes.

Extra-Curricular Clubs

At Brownlow Fold, we provide children with a wide range of extra-curricular activities. Extra-curricular activities help children to learn about themselves and develop and use their skills and knowledge in different contexts. In addition to building skills within a specific discipline, extracurricular activities are great for developing general academic and soft skills. For example, debating for public speaking, academic competitions for exam strategies and sport for teamwork. Being part of a group or team also provides a sense of belonging, with extracurricular activities offering an opportunity for children to interact with others with similar interests and potentially build friendships outside of their usual circle.

- Times Table Rock stars – Cross curricular club with Maths
- Nursery Games – Cross curricular with the use of the IWB
- Film Club

Enrichment

The online safety champions take part in virtual training linked to keeping safe online. Following on from the training, which is delivered by Bolton SICT, the online safety champions lead whole school assemblies and lead a quiz linked to online safety.

Other enrichment opportunities include but are not limited to:

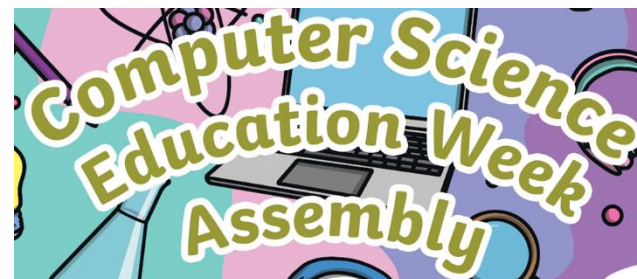
Bolton SICT visit – Year 3

Bolton SICT visit - Year 6

Safer internet day

Virtual Reality workshops

**Internet and
Phone Safety**
Multiple Choice Quiz Game

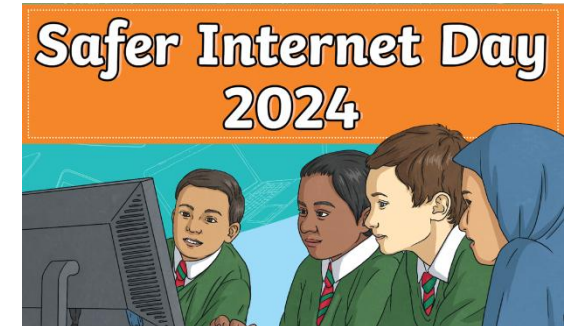


Film Festival Week

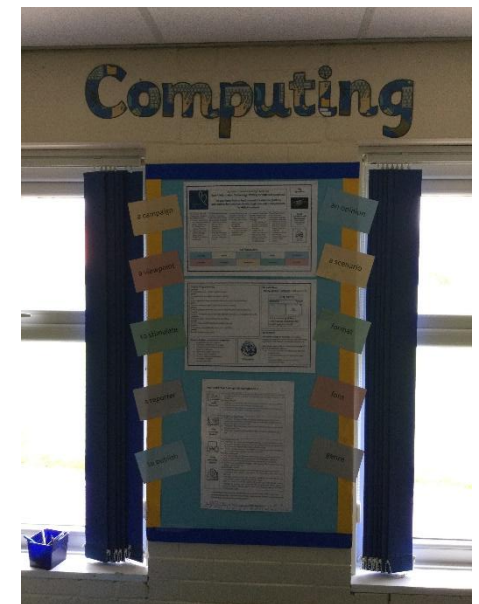
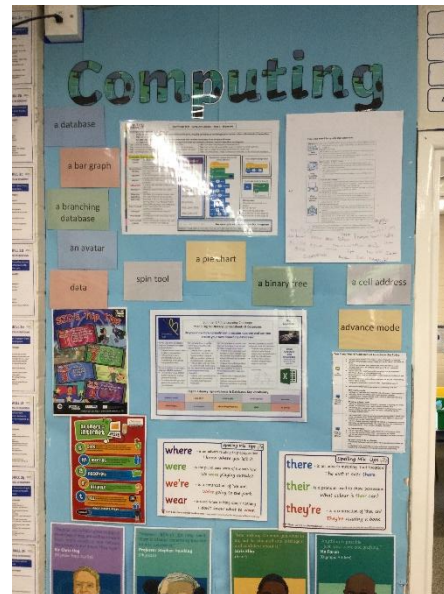
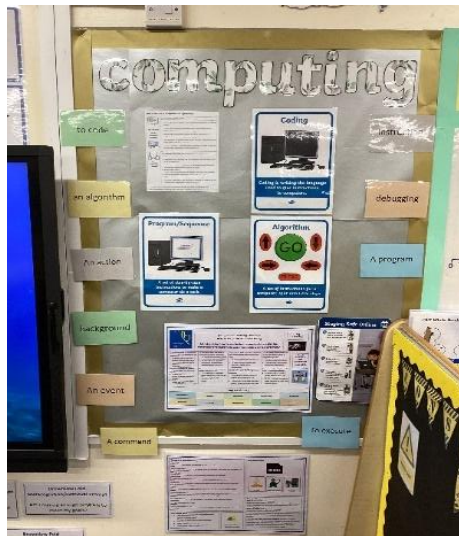


Assemblies

During each academic year, the Computing lead plans and delivers assemblies which link to Computing. Some assembly themes are suited to being delivered to the whole school and other assembly themes are suited to specific key stages.



Learning Environment Celebrating Work





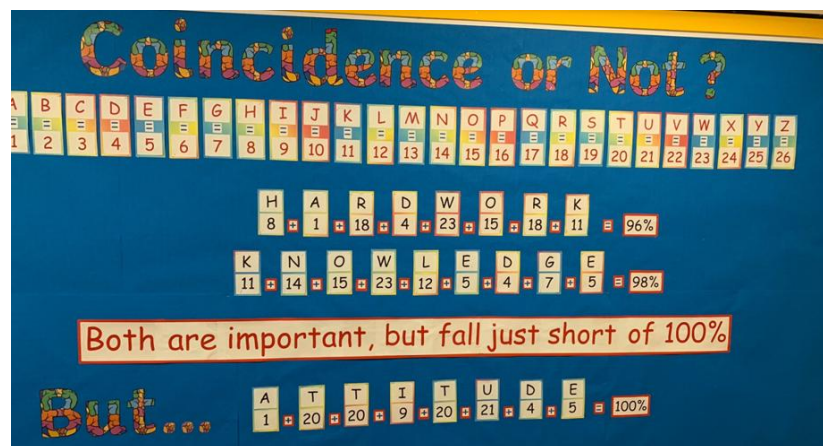
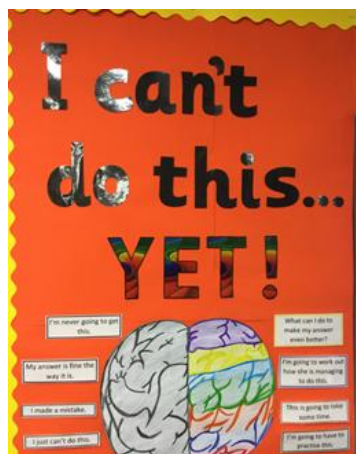
Smoothwall

Smoothwall exists to help keep children safe and thriving in their digital lives. At Brownlow Fold we work closely with Smoothwall to ensure our parents and pupils are informed with the most up to date information regarding Online Safety. Our weekly newsletter has an online safety section and we also offer parent workshops which cover certain/different Online Safety topics.



Growth Mind-set

At Brownlow Fold we teach the children to love challenges, be intrigued by mistakes, enjoy effort, and keep on learning (even when they find work challenging). Adopting a Growth Mind-set approach offers an optimistic view about what is achievable for everyone at Brownlow Fold. Our pupils demonstrate having a growth mind-set during computing lessons. Some of the Curriculum content is very challenging and pupils are at ease when facing new concepts and challenges by having a growth mind-set. Our pupils often see challenges as an opportunity to learn and grow.



Brownlow Bucket List

At Brownlow Fold we have carefully designed a 'Brownlow Bucket List' to provide our pupils with a range of memorable and meaningful experiences during their time with us. Rather than being a list created individually, it is a collection of activities and opportunities chosen by the school, ensuring that every child has the chance to take part. Our aim is for pupils to leave Brownlow Fold having not only achieved academically, but also having enjoyed a wide variety of experiences that will enrich their personal growth, confidence, and sense of community. These activities include opportunities to:

- Try new challenges both in and outside of the classroom.
- Take part in cultural, creative, and sporting experiences.
- Develop life skills that will support them beyond primary school.
- Celebrate important milestones with their peers.

The Bucket List is something we want children to be proud of as they move on to the next stage of their education. Each item ticked off will represent an achievement or special memory that has shaped their journey with us.



Things to achieve before I leave...

Take part in a Forrest School Workshop 	Become a pupil ambassador 	Attend the Headteacher celebration tea party 	Share and debate my views 	Try food from another country
Have my art work exhibited 	Participate in the schools linking projects with pupils from another school 	Take part in a sports competition 	Visit a place of worship 	Carry out a science experiment
Take part in Geographical field work 	Read a target amount of books each year 	Recite a poem 	Perform on stage 	Achieve an Empowered Learner Award
Achieve the Teddy Award 	Take part in the Y6 residential 	Visit a beach 	Learn to ride a bike (Bikeability) 	Help look after our school dog (Teddy)
Visit a library or museum 	Learn to swim 	Achieve the Star of the week 	Meet a member of parliament 	Raise money for charity
Plant flowers and seeds in the sensory garden 	Record an episode for the Brownlow podcast 	Take part in the Learner to Learner programme 	Find my way using a map/compass 	Take part in an extracurricular club
Meet an author 	Learn to play an instrument 	Ensure I have a Growth Mindset 	Visit an airport 	Complete a Commando Joe mission
Sing on a stage as part of choir 	Achieve the reader of the week 	Take part in the Brownlow Bake Off 	Enter a competition 	 Brownlow Fold Primary <i>Together we fly</i>