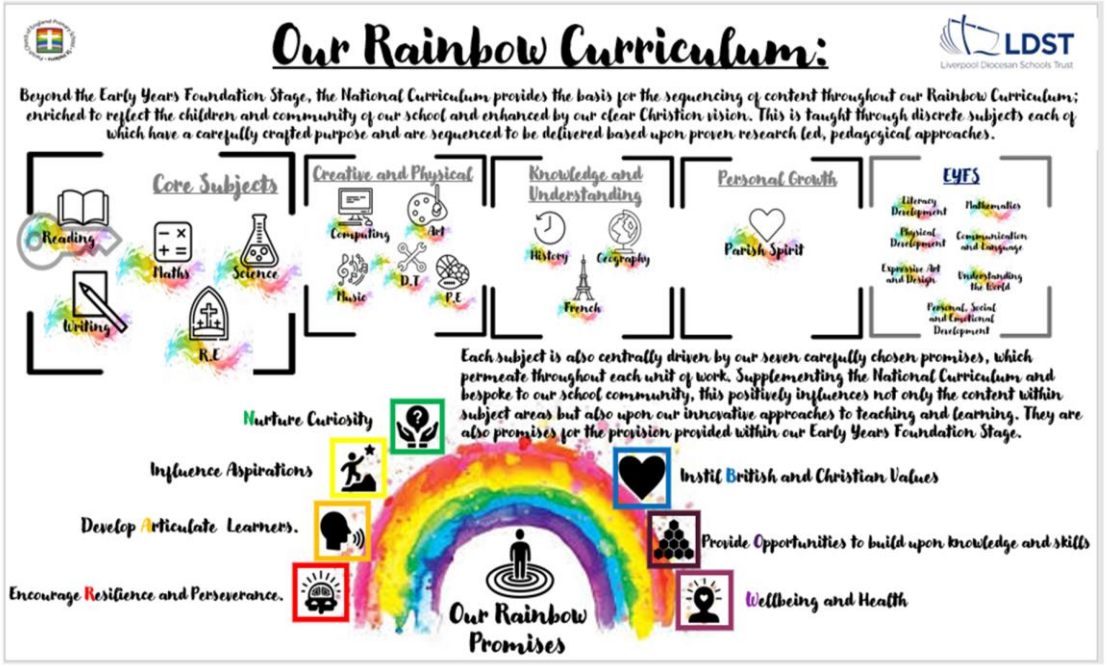
Computing Subject Handbook:

Parish C.E Primary School

1.) Whole School Curriculum Intent:

Our Rainbow Curriculum has been designed by Parish C of E Primary School to provide a bespoke, unique, and exciting learning experience which, through the nurturing of curiosity, aims for our pupils to develop into articulate learners with high aspirations. Within this broad and balanced approach, we place an important emphasis on developing resilience and perseverance and promoting wellbeing and health, with reading as the key to everything that we do.

The purpose of our Rainbow Curriculum is to ensure that our children are successful in life and learning, no matter what their starting points and barriers to learning may be. Just as the Rainbow symbolises hope from a Christian perspective, the Rainbow Curriculum is designed to offer our children hope for the future in terms of their achievements and aspirations. As a school, our curriculum sets high expectations for every child, meaning that we are relentless in our commitment to overcoming barriers faced by our pupils and to developing children who are self-motivated in their pursuit of learning. In Genesis, God tell us that the Rainbow signifies his promise to the Earth; following his lead, our Rainbow Curriculum signifies our promise to the education of the pupils that we serve.



2.) Computing Curriculum Vision:

Our Christian vision is defined as "Learning and Growing Together in Faith, Hope and Love." These three virtues are not only important in Christian discipleship; they are also important to how we live our lives at Parish CE Primary School. These values give us strong links to our PAST, as well as acting as a reminder of what is most important to us in the PRESENT and forming a basis for how we want to help the children in our care to learn and grow in the FUTURE. They also connect our school ethos to the wider Church of England vision for education.

At Parish, we strive to ensure our children are "ready, respectful and responsible" users of information and communication technology, both now and in the future.

Many jobs in 2030 have not yet been invented, therefore we are passionate about ensuring that our children are fully equipped to be able to function and work in our everchanging technological society.

3.) Computing Curriculum Intent:

i.)	What is the intent statement for our Computing curriculum?
The intention of our Computing Curriculum is to prepare our children for a rapidly changing world using technology. Our high-quality Computing Curriculum is designed to enable them to use computational thinking and creativity to further understand the world. At the core of our Computing Curriculum 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 under- standing, we intend for our children to use information technology to create programs, systems, and a range of content. We aim to ensure 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.	
ii.)	How is our Computing Curriculum linked to our intrinsic 'Rainbow Promises' (including British/Christian Values alongside SMSC development)?

COMPUTING Rainbow Promises—Parish C.E Primary School

R = Encourage Resilience and Perseverance A = Develop Articulate Learners. I = Influence Aspirations. N = Nurture Curiosity B = Instil British and Christian Values O = Provide Opportunities to build upon knowledge and skills. W = Wellbeing and Health.	**ENCOURAGE RESILIENCE AND PERSEVERANCE** Approach to teaching and learning, with open ended tasks aimed to encourage resilience and perseverance. Clear development of key concepts, such as debugging, encouraging perseverance throughout the curriculum.	**DEVELOP ARTICULATE LEARNERS** Development of practical computing skills such as typing and presentation. Ensuring children are articulate when online, using formal language. Use of Speak Its. LDST Vocabulary Pledge.	**INFLUENCE ASPIRATIONS** Links to computing based careers during our annual careers week. Preparation for the world of work and digital careers. Opportunity to become a digital leader.
NURTURE CURIOSITY Use of a variety of interesting programmes and software including Flowol, Scratch and Kodu. Link to other curriculum areas and the possibility of computing outside of the classroom. Ability to create and be naturally curious to explore online and through programmes.	**INSTIL BRITISH AND CHRISTIAN VALUES** Christian Values Through online safety: Love, trust, friendship. British Value: Mutual respect. Rule of laws Individual liberty *SMSC woven throughout.*	**PROVIDE OPPORTUNITIES TO BUILD UPON KNOWLEDGE AND SKILLS** Subject planning and delivery sequenced and includes: Creation of progressive knowledge planners using NCCE. Schema within and across subjects. Opportunities for collaboration. Retrieval opportunities built into units. Built around Rainbow Promises.	**WELLBEING AND HEALTH** Curriculum Content: E-Aware and how to be safe online. Safer Internet Day. Promote Personal Development and Wellbeing by: Consideration of opportunities to use modern technology to assist us in maintaining our physical and mental health.

At Parish, we instil Christian Values in the subject of Computing by:
Faith:
In Computing, learners gain an understanding of how technology can be used to share ideas, beliefs and faiths. Learners look at how to stay safe online (with particular reference to trusting others and copyright) and also have the opportunity to use technology to further enhance their learning across the curriculum.
Hope:
In Computing, we aim to influence the children's aspirations and provide many exciting opportunities that the children can be a part of. Furthermore, we hope to provide equal access to technology, particularly for those that may be less fortunate.
Love:
In Computing, we show love for one another through learning how to stay safe online and how to promote healthy balanced lifestyles. We also show love for different beliefs and attitudes as we collaborate and work together.
At Parish, we instil British Values in the subject of Computing by:
Individual Liberty:
Computing at Parish promotes learner's individual viewpoints and their own ideas. Learners are encouraged to use technology effectively to support their learning and understanding of the world. Through programming and coding, learners have time to problem solve, reflect and develop their understanding of various types of technology.
Rule of Law:
Children learn about how technology can be used in unacceptable ways and the repercussions of these actions. They learn about the ways to combat any issues they might be faced with in a digital society and who to speak to, both in school and at home.
Democracy:
Learners are encouraged to take on the views of others. Learners will develop an understanding of about of different viewpoints and how these can often be shared on social media sites. Learners experience how to use technology safely and what to do when they see or hear technology being used and they deem it to be unacceptable.

Mutual Respect and Tolerance of those with Different Faiths and Beliefs:	
In our school, it is vitally important learners learn about how to stay safe online and respect others online. Learners know how to use technology safely and how to respect each other's viewpoints. Learners are supported to be equipped with a skill set on how to share any concerns they have when using the internet.	
At Parish, we develop SMSC in the subject of Computing by:	
Spiritual	
Mirrors (Reflection on thoughts and feelings).	• As part of our Parish Spirit Curriculum, students reflect and create on their values and beliefs as they use online platforms. • Throughout the Computing curriculum, pupils are continually looking to understand their own interpretation of a given subject. Throughout the curriculum, pupils understanding both the advantages and limitations of ICT considering how ICT can let students have the opportunity to reflect on how computers can sometimes perform better in certain activities than people.
Windows (Looking out)	• Computing provides opportunities for reflection of awe and wonder about the achievements in ICT today and the possibilities for the future. • Children are able to wonder at the power of the digital age including the use of the internet and social media. National Online Safety [NOS] is delivered across the Parish Spirit curriculum, to prepare children for using technology outside of school.
Doors (Stepping out into the world)	• Pupils are able to be 'Ready, Respectful and Responsible' users of technology when online both in school and at home. • Pupils are able to confidently use the internet as a gateway to big life issues. Our curriculum begins to prepares children for the next stage of their education including future employment and an age of computerisation.
Moral	
Computing encourages learners to be reflective in the ways that technology can support and enhance their understanding of the world around them. It encourages learners to be self-reflective and construct questions based on their level of understanding, of technology in their lives. Learners are encouraged and challenged to think about the best ways technology can support their learning across the entire curriculum.	
Social	
Social issues are common themes within Computing at Parish. We intend for our children to use information technology to create programs, systems, and a range of content. We aim to ensure 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 (thus influencing aspirations). Alongside this, learners develop an understanding of how technology in our lives creates a digital society. Learners develop an understanding of Online Safety and how to protect themselves and their identities.	
Cultural	
Learners experience Computing through real life concepts. Our key focuses include; Digital Society, Technology in our lives and handling data. Learners have the opportunity to use Computing to enhance their understanding of all aspects of the curriculum and encourages learners when to seek out the use of technology to support their learning.	

iii.) What does the Computing long-term plan look like and what scope does this offer?

	Autumn 1	Autumn 2	Spring Term	Summer Term
Curriculum Strands	Computer Systems and Networks.	Creating Media.	Data and Information.	Programming.
Nursery	Computer Systems and Networks. Introduction to Technology within Continuous Provision.			
Reception	Computer Systems and Networks: Technology Within Continuous Provision	Creating Media: Learning Enquiry titled 'Digital Painting.'	Data and Information: Data Within Continuous Provision	Programming: Learning Enquiry titled "Moving a Robot."
Year 1	Computing Systems and Networks: Technology Around Us	Creating Media: Digital Writing.	Data and Information: Grouping Data.	Programming: Introduction to Animation.
Year 2	Computing Systems and Networks: IT Around Us (Outside of School).	Creating Media: Digital Photography.	Data and Information: Pictograms.	Programming: Robot Algorithms. An Introduction to Quizzes.
Year 3	Computing Systems and Networks: Connecting Computers.	Creating Media: Desktop Publishing	Data and Information: Branching Databases.	Programming: Sequence in Music. Events and Actions.
Year 4	Computing Systems and Networks: The Internet.	Creating Media: Audio Editing.	Data and Information: Data Loggers.	Programming: Repetition in Shapes. Repetition in Games.
Year 5	Computing Systems and Networks: Sharing Information.	Creating Media: Video Editing.	Data and Information: Flatfile Databases.	Programming: Selection in Physical Programming. Selection in Quizzes.
Year 6	Computing Systems and Networks: Communication.	Creating Media: Web Page Creation.	Data and Information: Spreadsheets.	Programming: Variables in Games. Sensing.

CURRICULUM PROGRESSION

Our bespoke planning utilises some resources from The National Centre for Computing Education (NCCE). Funded by the Department for Education, this approach provides evidence-informed, high-quality resources that are proven to inspire pupils and teachers alike. Our carefully crafted lesson structure incorporates 'Rosenshine's Principles of Instruction' for lesson delivery aimed at developing a deepening, long term and adaptable understanding of computational thinking, linked to our Mathematics curriculum.

FOUR CURRICULUM STRANDS

Computer Systems and Networks

Creating Media

Data and Information

Programming

TRANSFERRABLE CONCEPTS

Creating * Problem solving * Application

Exploring * Collaborating * Sharing

Debugging

These strands and concepts have been chosen based upon the National Curriculum Programmes of Study for Computing.

iv.) How is EYFS the 'bedrock' for further study in Computing?

Despite Computing not being explicitly mentioned within the updated Early Years Foundation Stage (EYFS) statutory framework, at Parish we believe there are many opportunities for young children to use technology to solve problems and produce creative outcomes (through the characteristics of effective learning).

For this reason, we have created bespoke EYFS knowledge planners for the discipline of Computing, aimed at providing the foundations for further study and National Curriculum coverage. At the core of our EYFS Computing Curriculum, pupils are

provided with invaluable opportunities to utilise technology (computer systems and networks) in all areas of learning. Once the children move into Reception, they then progress onto using information technology to create media, use data and information and for programming; thus, preparing children for National Curriculum learning in Y1.

v.) How is our Computing curriculum sequenced and key content prioritised?

The delivery of our Computing offer is split into four curriculum strands (based upon the National Curriculum Programmes of Study for Computing):

- Computer Systems and Networks
- Creating Media
- Data and Information
- Programming

All year groups study the same curriculum strand during the same term of the year. Strands are progressively taught through a knowledge enabled approach to provide children with the technical knowledge and skills to apply their understanding over time through both unplugged and computer-based lessons.

For each strand, bespoke knowledge planners have been created, to consider both prior knowledge and future learning. Furthermore, 'Computing Milestones' have been clearly mapped out within detailed knowledge organisers, to specify the essential knowledge that ALL pupils must know and remember.

Throughout the academic year, seven transferrable concepts are also applied and revisited within each lesson to develop deep computational thinking and creativity.

Teachers utilise resources from the government funded 'Teach Computing Curriculum' provided by the National Centre for Computing Education.

Teaching Time:

'Computer Systems and Networks' and 'Creating Media' units are delivered for a minimum of six hours each while 'Data and Information' and 'Programming' are discretely taught for a minimum of ten hours as they delivered across a term. All lessons are taught through our be- spoke structured lesson sequence with each class allocated a focus week for teaching each half-term.

At the end of the unit, a relevant assessment task is completed to provide the children with the opportunity to apply their knowledge of the key skills taught to date.

The transferable knowledge and concepts taught within our discrete Computing curriculum are also built upon and applied through other subject areas.

National Online Safety [NOS]:

National Online Safety, alongside our 'Online Safety Reading Spine' is used to plan and teach online safety from EYFS to Y6 as part of our Safeguarding Curriculum. The eight units per Key Stage are taught once per half- term and are delivered during Parish Spirit lessons. Links to online safety are also made within the Computing lesson sequence related to the guidance stated in 'Education for a Connected World'.

vi.) How do we ensure that cultural capital in Computing is the essential knowledge to be educated citizens?

Cultural capital is the accumulation of knowledge, behaviours, and skills that a child can draw upon and which demonstrates their cultural awareness, knowledge, and competence; it is one of the key ingredients a pupil will draw upon to be successful in society.

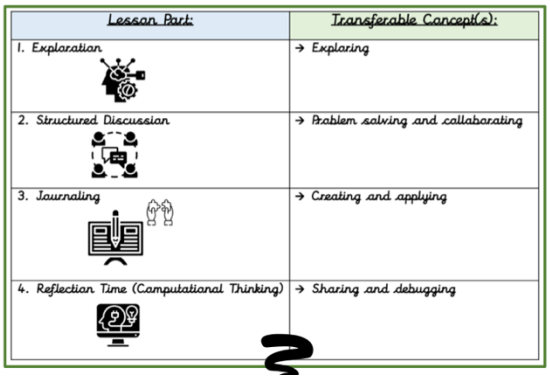
Through our Computing Curriculum we build cultural capital with a focus upon:

- Application of our school rules; being 'Ready, Responsible and Respectable' users online, enhanced through our online safety lessons.
- All children are provided with the opportunity to engage positively, critically, and competently in the digital environment - thus enhancing digital citizenship. 'Thinking like a Computer Scieintist' is also incorporated within each lesson.
- Understanding of transferrable skills that can applied across all STEM subjects, preparing the children of Parish for the jobs of today and tomorrow.
- Introduction of Digital Leaders whose role is to be passionate about aspects of the digital world.

4.) Computing Curriculum Implementation:

i.)	What is our consistent pedagogical approach to teaching and learning in Computing?

Our bespoke four-part lesson for Computing at Parish is similar in approach to a Maths No Problem lesson incorporating Rosenshine's Principles of Instruction of effective teaching.



Lesson Part:	Transferable Concept(s):
1. Exploration	→ Exploring
2. Structured Discussion	→ Problem solving and collaborating
3. Journaling	→ Creating and applying
4. Reflection Time (Computational Thinking)	→ Sharing and debugging

This structure allows children to develop an adaptable understanding of computational thinking with embedded key concepts carefully woven throughout each part of our lesson delivery, to promote child-led learning. With this approach, the whole class can progress in the learning while allowing pupils to develop through their own depth of understanding rather than acceleration of knowledge and skills.

Each component of the four-part lesson formulates every Computing lesson that we deliver. This structure creates consistency, and our effective delivery allows children to apply the fundamental principles and concepts of Computer Science. They can then develop analytical problem-solving skills and learn to evaluate and apply information technology.

Whole-school links to our curriculum intent are also made to ensure our 'Rainbow Promises' permeate throughout our teaching and learning.

In addition to sequencing using knowledge planners (ensuring successful curriculum implementation), bespoke knowledge organisers for pupils also provide metacognitive support, outline key milestone knowledge, they are often used for independent home study and provide strong links to reading.

ii.)	How do we ensure high expectations in Computing?

We ensure high expectations through:

- The high-quality intent for our Computing curriculum at Parish, with concrete links to our Rainbow Curriculum (through our Rainbow Promises) that can be evidenced across all year groups.

- A consistent approach to teaching and learning (through implementation of our 4-part lesson structure across school) supporting children's working memory, ensuring that they know and remember more.
- Investment in high-quality teaching and learning resources including our 'Computing Reading Spine' and 'Online Safety Reading Spine'.
- Regular monitoring and coaching to support staff in their CPD needs.

iii.) How is 'Reading at the Beating Heart' of the Computing curriculum?

"Reading is at the Beating Heart" of our Computing curriculum and is embedded throughout each curriculum strand, enhanced by using our 'Wider Reading Spine' texts, which work to bring the children's learning to life. As suggested by our Digital Leaders, the books are stored in the Computing Suite on display and are shared and explored regularly (as recommended on each knowledge organiser), to further enhance the children's understanding.

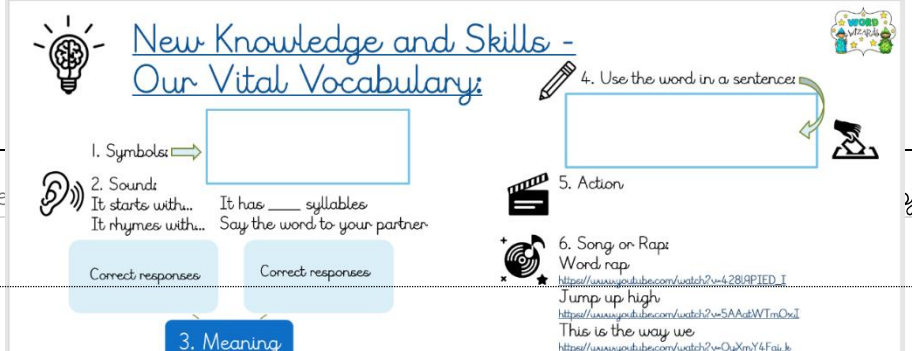
Furthermore, an 'Online Safety Reading Spine' has been created, with core texts allocated to each year group and delivered through our Parish Spirit curriculum.

In addition to this, reading around the subject regularly takes place with books from the school's library service, providing further opportunities for wider reading, alongside our bespoke knowledge organisers.

iv.) How is vocabulary taught in Computing?

Within Computing, vocabulary is taught using some of the Word-Aware approaches. Throughout school, a range of age-appropriate strategies are used across all year groups to embed our vital vocabulary (seen below on our 'Word Wizard').

'Vital vocabulary' has been carefully stated per lesson on all Knowledge Planners to ensure it is progressive and accurately supports retrieval.



v.) How do we meet the needs of all learners (including disadvantaged pupils, SEND pupils and high achieving learners) in Computing?

Our in-depth Computing planning allows children to improve their own metacognition and access the lesson at their own level. Children are encouraged to deepen their own understanding with use of our knowledge organisers for pupil support, with lessons being adapted and scaffolded accordingly, based on pupils individual needs. Pre-teaching, 'Talk-It' homework tasks and retrieval interventions also take place to support the retention of knowledge for all pupils – specifically our 'Curriculum Milestones'.

To identify the key content that is most important to enable pupils to move their next stage of education (and reduce cognitive overload) 'Computing Milestones' have been created to stipulate the essential knowledge that ALL pupils need to know and remember. Our 'Milestone Knowledge' is the pre-determined essential knowledge that children require to progress to the next stage of their learning.

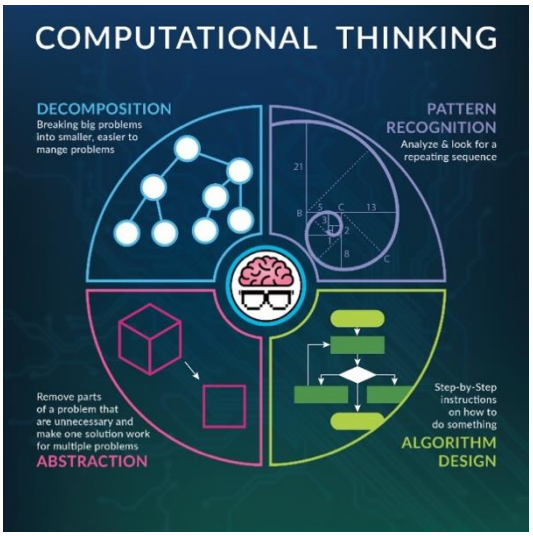
The 'Computing Milestones' are also used to support learners that are unable to access their current year group's curriculum due to a particular Special Educational Need or Disability [SEND]. Several of these children access our 'Rainbow Room' provision and this knowledge is used to effectively plan their bespoke curriculum.

For other children with a SEND, they are supported within their Computing lessons by the following recommendations from the LDST 'Quality First Teacher Toolkit'. This supports our work on the EEF's recommendations around 'Adaptive Teaching' and meeting the needs of all learners through appropriate explicit instruction, cognitive strategies, scaffolding, flexible grouping and technology.

Physical and Sensory Needs:	**Social and Emotional Needs:**
Ensure that left and right-handed pupils are not sitting next to each other with mouse hands adjacent.	Provide opportunities for kinaesthetic learning e.g. practical activities, experiential learning, multi-sensory resources.
Planning across 4 units, with application of knowledge tasks	Ensure groupings provide positive

vii) How do we ensure that pupils 'know more, remember more and can do more' in Computing?

The curriculum has been planned to systematically include the key strands of the National Curriculum and computational thinking, alongside core knowledge. This is all carefully and coherently mapped out onto unit individual knowledge planners with links made both to prior and future learning. Links are also made across cross-curricular subjects such as Maths, Art, Geography and STEM subjects.



The lesson structure is spaced to include a retrieval application of knowledge task to allow children to internalise the knowledge.

Retrieval activities make discrete connections to prior learning and sequentially build their knowledge. Children are assessed throughout each topic, before completing an application of knowledge exit task. Class overviews are then completed and analysed by subject champions.

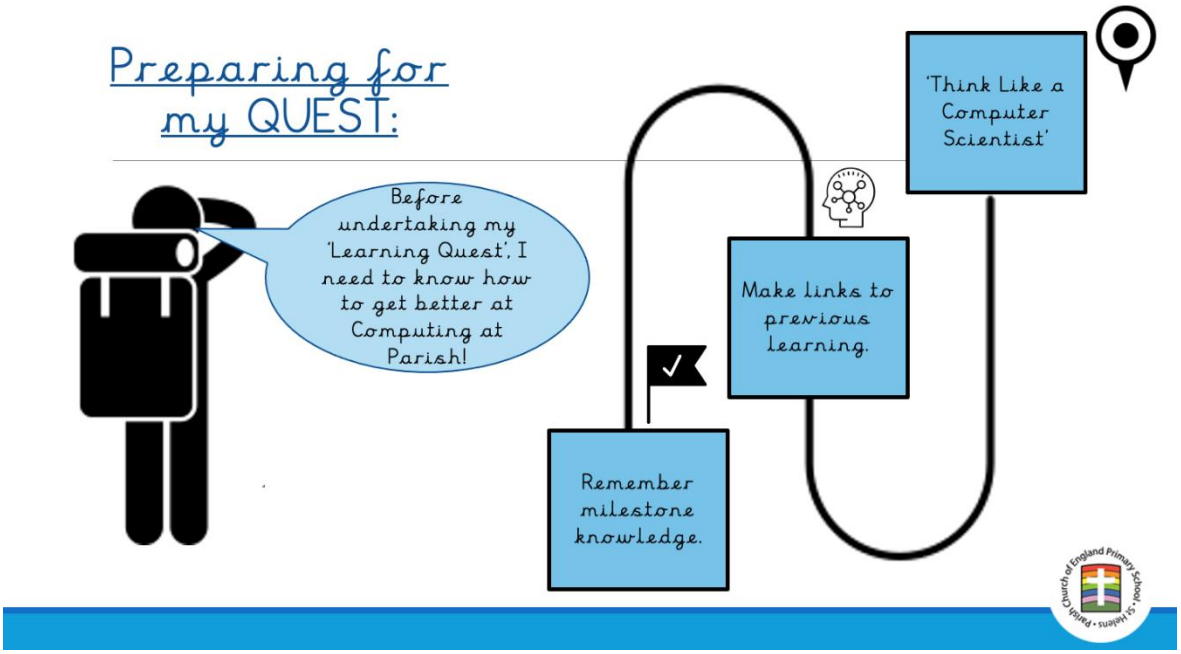
Retrieval is embedded through the discussion section of the lesson structure. This builds on prior knowledge and ensures that previous knowledge is sticky. Retrieval is also brought into lessons during checkpoints.

vii.) What does 'getting better in Computing' look like?

Getting better in Computing involves:

- Remembering our core 'Milestone Knowledge' from each unit taught. This should be revisited and retained so that it is part of the children's long-term memory.

- Making links to previous learning to ensure knowledge is sticky and can be retained. All children understand the meaning of retrieval and regularly are provided with the opportunity to make links to prior knowledge.
- Children 'Think Like a Computer Scientist' to support computational thinking and digital literacy.



viii.) How are our staff (including the subject leader) supported with their Computing subject knowledge)?

CPD programme completed and disseminated by Subject Champion through the Government funded 'Teach Computing Curriculum' provided by the National Centre for Computing Education.

The Computing Subject Leader is also part of the LDST Computing Curriculum Network, supported by 'School Improvement Liverpool' with relevant curriculum updates and opportunities for resource collaboration. These updates are shared and regularly disseminated to teaching staff to ensure all staff are supported with their subject knowledge.

Further examples of courses attended in the last 2 years:

- National Centre for Computing Education Round Up – The Beacon CE Primary School.
- STEM Learning, Teaching and Leading KS1 and KS2 Computing. Through this, I was rewarded with a bursary for the school.

- Learn Ed Roadshow based on Technology in Schools.
- Rosenshine's Principles in Action.

Due to being a National Online Safety [NOS] Certified School, all members of staff are registered and are regularly alerted to complete CPD accredited training. By accessing the NOS website, staff can also take part in dedicated Online Safety eLearning Hubs and utilise a wide range of free resources and lesson plans. In addition to this, staff receive Online Safeguarding Updates provided monthly.

Fantastic onsite and online technical support is provided to all members of staff by The Little IT Company.

At Parish, Subject Champions are often provided with 'Subject Development Days' where we can work with the Curriculum Leader to provide updates, make improvements, or attend valuable CPD courses.

ix.) How are we ensuring that children 'keep up and not catch up' in Computing?

Throughout the Computing Curriculum children "keep up and not catch up" by teaching to the top and having high expectations of all children. Alongside this, all children are expected to know the 'Computing Milestones' which will enable them to progress to the next stage of their education.

Our work within the Computing curriculum, meets the recommendations from the 'Teaching a broad and balanced curriculum for education recovery' (updated in November 2021) with a focus upon teaching Computer Systems and Networks, Creating Media, Data and Information and Programming, whilst providing enough time for the children to practice and apply their skills. (Refer back to LTP).

It is likely that many pupils will have missed out on purposeful opportunities to use different types of software and other applications during their periods of remote learning. Therefore, we are focusing on the practical elements of computer science now that pupils have access to specialist software and explicit modelling. However, in doing this, we have been careful not to compromise the intention of our planned curriculum for computing or dilute our version for the subject.

Gaps in knowledge of how to use digital devices have been identified and addressed. We understand that it is important for pupils to use devices confidently and competently, so that they can focus on complex tasks without also having to learn how to use a device, which may otherwise get in the way of processing information.

It is important to note that priority has also been given to using computing devices safely and responsibly, with additional online safety lessons incorporated into both the Computing and Parish Spirit Curriculum.

x.) What does research say is good practice in Computing?

Although there is no official Ofsted review, good practice in Computing is ensured by

- Subject leader attending regular CPD and Subject Leader Networks and the DfE conference.
- Use of NCCE resources as Teach Computing recommend by the government.
- Teaching and Learning pedagogy is embedded across the curriculum to ensure that children 'know more and remember more'.

xi.) What are assessment procedures in Computing?

Retrieval activities are incorporated into lessons to make discrete connections to prior learning and sequentially build the children's knowledge. Children are assessed throughout each topic, before completing an application of knowledge exit task, where teachers make a final judgement (emerging/expected/exceeding) which is recorded on snapshot, in relation to the assessment statements. Each term, the subject leader then completes a report/capture sheet, including moderation of judgements.

5.) Computing Curriculum Impact:

i.) What does our assessment tell us about attainment and progress in Computing?

From curriculum monitoring, children across all year groups overwhelmingly stated that they love their Computing lessons and particularly love accessing the Computing Suite, as many do not have ease of access to desktop computers at home.

Children have a secure knowledge of input/process/output and can now apply this to wider contexts both within and beyond Computing lessons. Pupils also strongly agreed that they knew how to act safe when they are online and were able to provide examples.

Pupil surveys and lesson drop ins demonstrate that children are engaged in their computing lessons and are curious to discover, learn and remember more. High aspirations are set for all pupils and there is a clear developing sense of independence. Furthermore, there has been an improvement in standards with increased depth of knowledge clear when speaking to the children.

Children spoken to can apply their knowledge more widely and have high aspirations for using technology in the future, developing positive habits for 'Computing Capital' amongst all year groups.

ii.) <u>What does monitoring tell us about standards in Computing?</u>

Monitoring that has taken place this year includes lesson drop ins from EYFS through to Year 6, looking at Seesaw/Pupil Share completion of work evidence, and pupil/staff interviews and pupil voice to provide a clear triangulation of standards.

The curriculum monitoring this year has shown that standards in Computing are high. All children across school are accessing the curriculum and independence is generally increasing. Children are knowing more and remembering more of the ambitious knowledge in addition to knowing and applying their disciplinary knowledge to 'Think like a Computer Scientist'.

Monitoring also shows that staff have high expectations, and all staff have the relevant subject knowledge to provide a high-quality Computing education. All staff teach consistently and are also aware of current developments around Computing.