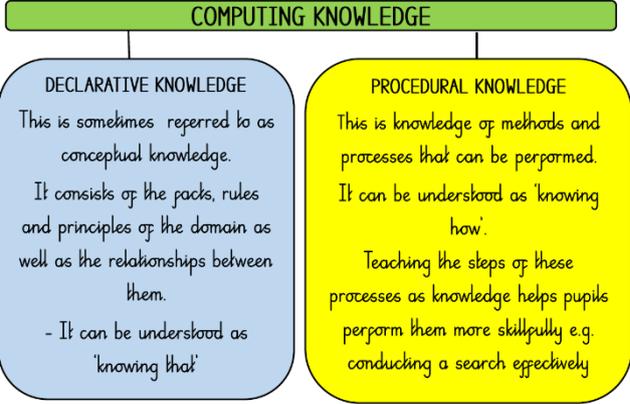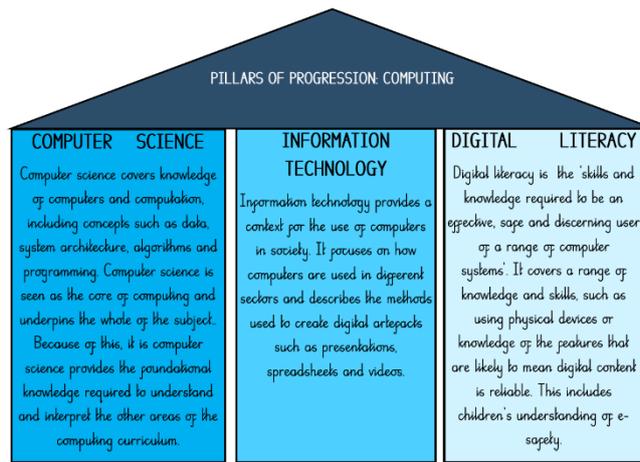## Computing at Lower Heath CE Primary School

INTENT	
OUR CURRICULUM	Our Curriculum aims to instil a sense of enjoyment around using technology and to develop pupil's appreciation of its capabilities and the opportunities technology offers to, create, manage, organise, and collaborate. We want to develop pupils' confidence when encountering new technology, which is a vital skill in the ever evolving and changing landscape of technology. Through our curriculum, we intend for pupils not only to be digitally competent and have a range of transferable skills at a suitable level for the future workplace, but also to be responsible online citizens.
KEY KNOWLEDGE	It is vital to children's computing education that they know more and remember more of key computing knowledge. In our computing curriculum, different strands of historical knowledge have been identified. **COMPUTING KNOWLEDGE** **DECLARATIVE KNOWLEDGE** This is sometimes referred to as conceptual knowledge. It consists of the facts, rules and principles of the domain as well as the relationships between them. - It can be understood as 'knowing that' **PROCEDURAL KNOWLEDGE** This is knowledge of methods and processes that can be performed. It can be understood as 'knowing how'. Teaching the steps of these processes as knowledge helps pupils perform them more skillfully e.g. conducting a search effectively These knowledge types will be taught through 3 main areas – the pillars of progression. These are: computer science, information technology and digital literacy.

PILLARS OF PROGRESSION: COMPUTING

COMPUTER SCIENCE

Computer science covers knowledge of computers and computation, including concepts such as data, system architecture, algorithms and programming. Computer science is seen as the core of computing and underpins the whole of the subject. Because of this, it is computer science provides the foundational knowledge required to understand and interpret the other areas of the computing curriculum.

INFORMATION TECHNOLOGY

Information technology provides a context for the use of computers in society. It focuses on how computers are used in different sectors and describes the methods used to create digital artefacts such as presentations, spreadsheets and videos.

DIGITAL LITERACY

Digital literacy is the 'skills and knowledge required to be an effective, safe and discerning user of a range of computer systems'. It covers a range of knowledge and skills, such as using physical devices or knowledge of the features that are likely to mean digital content is reliable. This includes children's understanding of e-safety.

The following diagram shows how each type of knowledge can be related to each of the pillars of progression.

FORM OF KNOWLEDGE	Computer science	Information technology	Digital literacy
Declarative	Programming syntax The purpose and function of different logic gates	Principles of effective multimedia design Spreadsheet formulae	Features of unreliable content
Procedural	Performing binary addition Implementing a repeat in a programming language	Setting up links in a slide Using formulae to calculate costs for a party	How to perform an advanced web search

The implementation section of this document will outline how these areas of knowledge and pillars of progression are threaded throughout our computing curriculum.

GOLDEN THREAD – EQUALITY, DIVERSITY, INCLUSION AND BELONGING	In this thread, we develop a culture of inclusion for all where everyone feels proud of their identity and is able to participate fully in school life. We develop children's understanding of e-safety and digital citizenship and encourage children to take responsibility for their safety and well-being when using computers. Children address prejudice and cyber-bullying and raise their awareness of how online media can affect their mental health.

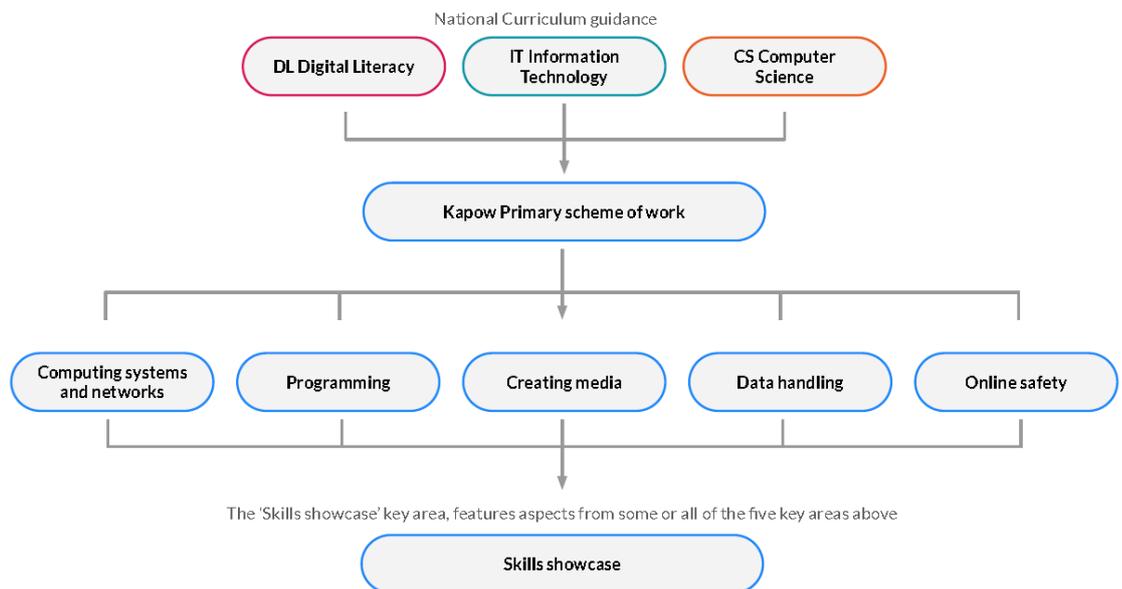| IMPLEMENTATION	
THE CURRICULUM FOR THIS SUBJECT AREA IS DESIGNED USING...	As outlined above, the computing curriculum is designed around the 3 pillars of progression: • Computer science • Information Technology • Digital Literacy Our National curriculum mapping document shows which of our units cover each of the national curriculum attainment targets as well as each of these three strands. Our Progression of skills and knowledge shows the skills and component knowledge that are taught within each year group and how these develop year on year to ensure attainment targets are securely met by the end of each key stage.
CURRICULUM COVERAGE IN THIS AREA IS PROGRESSIVE.	The scheme is organised into five key areas, creating a cyclical route through which pupils can develop their computing knowledge and skills by revisiting and building on previous learning: • Computer systems and networks • Programming • Creating media • Data handling • Online safety

National Curriculum guidance

DL Digital Literacy   IT Information Technology   CS Computer Science

Kapow Primary scheme of work

Computing systems and networks   Programming   Creating media   Data handling   Online safety

The 'Skills showcase' key area, features aspects from some or all of the five key areas above

Skills showcase

The implementation of the Computing scheme ensures a broad and balanced coverage of the national curriculum requirements, and the 'Skills showcase' units provide pupils with the opportunity to learn and apply transferable skills. Where meaningful, units have been created to link to other subjects such as science, art, and music to enable the development of further transferable skills and genuine cross-curricular learning.

Lessons incorporate a range of teaching strategies from independent tasks, paired and group work as well as unplugged and digital activities. This variety means that lessons are engaging and appeal to those with a variety of learning styles. Adaptive teaching guidance is available for every lesson to ensure that lessons can be accessed by all pupils and opportunities to stretch pupils' learning are available when required. Knowledge organisers for each unit support pupils in building a foundation of factual knowledge by encouraging recall of key facts and vocabulary.

Long-Term Plan for Computing

Cycle A					Cycle B			
YR	Yr 1/2	Yr 3/4	Yr 5/6		YR	Yr 1/2	Yr 3/4	Yr 5/6
COMPUTING SYSTEMS AND NETWORKS Using a computer PROGRAMMING All about instructions	COMPUTING SYSTEMS AND NETWORKS Improving mouse skills PROGRAMMING Algorithms unplugged	COMPUTING SYSTEMS AND NETWORKS Networks COMPUTING SYSTEMS AND NETWORKS Journey Inside a computer	COMPUTING SYSTEMS AND NETWORKS Search Engines DATA HANDLING Mars Rover	A u t u m n	COMPUTING SYSTEMS AND NETWORKS Using a computer PROGRAMMING All about instructions	COMPUTING SYSTEMS AND NETWORKS What is a computer? PROGRAMMING Algorithms and debugging	COMPUTING SYSTEMS AND NETWORKS Collaborative Learning PROGRAMMING Further Coding with scratch	COMPUTING SYSTEMS AND NETWORKS Bletchley Park DATA HANDLING Big Data
COMPUTING SYSTEMS AND NETWORKS Exploring Hardware DATA HANDLING Introduction to data	CREATING MEDIA Digital Imagery PROGRAMMING Bee-Bot	CREATING MEDIA Online Trailers PROGRAMMING Programming - Scratch	CREATING MEDIA Stop motion animation PROGRAMMING Programming Music	S p r i n g	COMPUTING SYSTEMS AND NETWORKS Exploring Hardware DATA HANDLING Introduction to data	DATA HANDLING International Space Station PROGRAMMING Scratch Jnr	DATA HANDLING Investigating Weather PROGRAMMING Computational Thinking	CREATING MEDIA History of computers PROGRAMMING Intro to Python
	ONLINE SAFETY	ONLINE SAFETY Online Safety	ONLINE SAFETY Online Safety	S u m m e r		ONLINE SAFETY	ONLINE SAFETY Online Safety	ONLINE SAFETY Online Safety

THIS SUBJECT LINKS WITH THE REST OF OUR CURRICULUM	Where possible, we try to link the termly computing focus with other areas of the curriculum, such as art, DT and geography. This can be more clearly identified within our 2-year planning cycle and topic webs. Within each theme, we map out 'launch, explore, energise and celebrate' opportunities. These sessions draw upon a variety of skills, subject areas and links with the local community.
ADAPTIVE TEACHING	We believe all children are entitled to the full age-appropriate computing curriculum. We have high expectations for all of our pupils and will adapt teaching accordingly. This may be by levels of support, choice of equipment available or by scaffolding of learning tasks.
TRIPS, VISITS AND THE LOCAL COMMUNITY SUPPORT THIS SUBJECT BY...	As referenced, all topics incorporate 'launch, explore, energise and celebrate' opportunities. As part of the 'launch', all children are immersed into the topic through use of engaging stimulus and materials. Through 'explore' and 'energise', children are expected to participate in an educational visit or workshop, and undertake research linked to a specific focus. A topic finishes with the 'celebrate' aspect, which allows pupils to share and present their achievements from the unit with members of the school community (this might be peers, other classes, parents/carers...)
THE SUBJECT IS ASSESSED BY...	Assessment takes place through teacher assessment. Before each unit, children take a quiz and then take the same quiz at the end of the unit. This is one way to demonstrate the knowledge gained during the unit. Each unit has formative and summative assessment opportunities. Each lesson includes guidance to support teachers in assessing pupils against the learning objectives and each unit has a unit quiz and knowledge catcher which can be used at the start and/ or end of the unit.
THE SUBJECT IS MONITORED THROUGH...	Scheduled computing monitoring sessions; with feedback being used to further improve practice. These sessions involve work scrutinies, learning walks and pupil voice.
STAFF DEVELOPMENT IN THIS SUBJECT INCLUDES...	Teachers have access to CPD videos with the KAPOW scheme which help to develop teacher subject knowledge in each of historical knowledge. Each lesson has a teacher video that exemplifies the key knowledge that the children will be learning. Training for foundation subjects continues on a rolling programme of staff meeting sessions, with regular opportunities to liaise with teachers across the trust who deliver the same programme, and with computing specialists within the trust secondary schools.

IMPACT

WHAT IS THE IMPACT OF OUR COMPUTING CURRICULUM?	The impact of our curriculum can be constantly monitored through both formative and summative assessment opportunities. Each lesson includes guidance to support teachers in assessing pupils against the learning objectives and each unit has a unit quiz and knowledge catcher which can be used at the start and/ or end of the unit.

After the implementation of our computing curriculum, pupils should leave school equipped with a range of skills to enable them to succeed in their secondary education and be active participants in the ever-increasing digital world.

The expected impact of following the Computing scheme of work is that children will:

➔ Be critical thinkers and able to understand how to make informed and appropriate digital choices in the future.

➔ Understand the importance that computing will have going forward in both their educational and working life and in their social and personal futures.

➔ Understand how to balance time spent on technology and time spent away from it in a healthy and appropriate manner.

➔ Understand that technology helps to showcase their ideas and creativity. They will know that different types of software and hardware can help them achieve a broad variety of artistic and practical aims.

➔ Show a clear progression of technical skills across all areas of the national curriculum - computer science, information technology and digital literacy.

➔ Be able to use technology both individually and as part of a collaborative team.

➔ Be aware of online safety issues and protocols and be able to deal with any problems in a responsible and appropriate manner.

➔ Have an awareness of developments in technology and have an idea of how current technologies work and relate to one another.

➔ Meet the end of key stage expectations outlined in the national curriculum for Computing.