

Computing Subject Rationale

Our Vision

LOVE, LEARN, SHINE.

SHINE in the light and love of God.

LOVE

We nurture each individual to be happy, healthy and safe, build positive and respectful relationships with others valuing their uniqueness and including everyone.

LEARN

We inspire children to a lifelong love of learning, to develop wisdom, knowledge and skills and be fluent, confident learners who are well prepared for life in a diverse world.

SHINE

We support children to grow and develop socially, emotionally, physically and spiritually, helping them to shine and share their light enabling themselves and others to flourish.

'People do not light a lamp and cover it with a bowl or put it under the bed. Instead they put it on a lampstand, so that people will see the light as they come in'.

Luke 8 V16.

Vision into Curriculum

Our vision translates directly into our curriculum in that:

Our curriculum promotes a love and appreciation of life and learning enabling children to *SHINE*, realise a passion for what is possible and enjoy life in all its fullness

National Curriculum Aims and Purpose

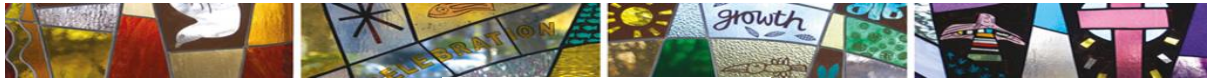
A well planned and effectively implemented curriculum begins with a sound and secure knowledge of the National Curriculum purpose and aims for the subject.

In Computing they are:

National Curriculum Purpose

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.

National Curriculum 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.

Quality First Curriculum Implementation in Computing

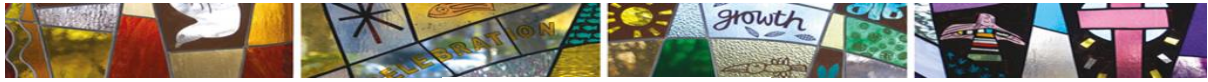
Quality first curriculum implementation in Computing supports children in becoming secure, and fluent in the identified agreed core knowledge and skills in Computing to enable them to develop their digital literacy. Fluency and security in core knowledge allows children to explore concepts in greater depth exploring and evaluating concepts and ideas. This then enables children to articulate informed responses about the world around them to connect, make sense of, and protect the world around them.

At St Peter's the journey to becoming computer literate begins in the Early Years. The distinct section on Technology has been removed from the new Early Years framework, on the understanding that children now have very high levels of access to ICT such as phones and tablets. Computing is understood as a way that children may record and develop their play, and thinking, switching fluidly between first hand and on-screen experiences. In Early Years, children are provided with ICT opportunities to support the 2020 Development Matters Guidance, and we work closely with parents to understand the ICT opportunities children have at home.

Kapow Primary's Computing scheme 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.

'Tinkering' with software and programs forms a part of the ethos of the scheme as 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.





Essential Characteristics of Computing

A feature of our curriculum design is the use of Essential Characteristics. These are the learning characteristics developed through the subject overtime. They act as a common thread between all the units studied in a subject and are developed from Early Years to Year 6.

In Computing they are:

- Computer science
- Information technology
- Digital literacy

These are then broken down 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

Knowledge in Computing

Substantive knowledge in computing is understanding how to use technology, how to be safe and knowing how to program. This is developed through deliberate practice and by children applying their knowledge of how to be computational thinkers. *“Computational thinking is an important life skill, which all pupils now need to develop. It is central to both living in and understanding our digitally enriched world. It is a cognitive process involving logical reasoning by which problems are solved across the whole curriculum and through life in general.”* (Computing at School, 2015)

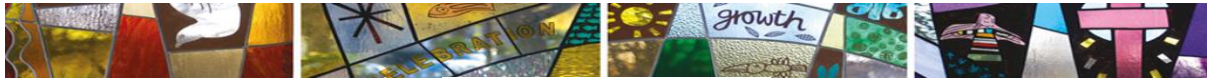
Creativity in Computing

Computing is an area of the curriculum that has many opportunities for children to demonstrate creativity through developing their own programs, systems and digital content whilst applying their developing computational thinking. Computing has opportunities for natural cross-curricular learning; examples include presenting data in tables, researching in History or writing instructions in English.

Monitoring & Assessing Progress in Computing

By progress, we mean children knowing and remembering more. The key question we ask is; *‘has a child really gained the knowledge to understand the key knowledge and concepts’*’.





Assessing children's progress is vital in order to establish their acquisition of knowledge and skills is building confidence and fluency in all subjects. At St Peter's learning always starts with the children's prior knowledge and any misconceptions they may have. Class teachers decide upon the most appropriate age-related way of obtaining the children's prior knowledge. Misconceptions that arise throughout the unit are identified and addressed appropriately by the teacher.

We track progress through teacher judgement, supplemented by frequent low stakes knowledge recalls (frequently in quiz format) and occasional formal tests to ensure knowledge is recalled and children are genuinely building upon secure prior knowledge.

In most subjects we are developing, knowledge organisers summarise key vocabulary (with agreed definitions), facts, and concepts. These clarify what has to be taught and are used as the basis of quizzes so that teachers can check the knowledge has been embedded.

In addition to assessing if children have secured the agreed key knowledge 'Milestones' related to the threshold concepts are used to assess children's understanding and progress. Systematic planning of opportunities to learn and practice the knowledge and skills of each milestone is built into each subject planning overview. A blocked approach to curriculum delivery including systematic structured opportunities for recall is currently being developed and implemented.

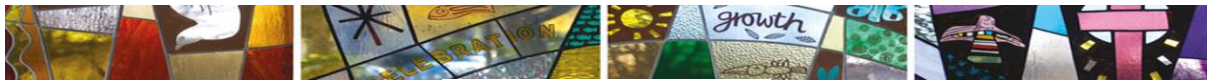
The impact of our Computing curriculum can be constantly monitored through both formative and summative assessment opportunities. Each lesson includes guidance to support teachers in assessing pupils against the learning objectives and each unit has a unit quiz and knowledge catcher which can be used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

After the implementation of our 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.

This will be demonstrated through the following impact statements:

- ✓ 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.

SEND in Computing

Wherever possible or appropriate children with SEND access Computing along with their peers as we recognise the importance for all our children to access our curriculum in line with our curriculum design principles.

For some children with SEND, particularly those with high needs, access to Computing is considered along with ensuring they have access to their personalised or adjusted curriculum. For example, enabling access to specialist programmes such as those advised by speech and language therapists, occupational therapy programmes or the SEN Hub. These programmes are timetabled to minimise the impact on the child's access to a broad and rich curriculum and do not impact on access to educational visits relating to Computing. Typically, these programmes are identified in EHCPs and ILPs and curriculum adaptations are agreed with parents.

Higher attainers in this subject are challenged to ensure they become fluent with the core key concepts through additional questioning and prompts (and tasks where appropriate) which helps extend their verbal reasoning skills as well as supporting them to engage in creating, evaluating, and analysing, delving deeper into the subject content.

For children with SEND, access to the learning in Computing lessons may need to be differentiated and scaffolded, whilst the planned, progressive curriculum content is retained. Children are supported to succeed through:

- Breaking down tasks into smaller chunks to achieve and prioritising understanding over task completion
- Giving sufficient time to process instructions, or adapted verbal or written instructions
- Wherever appropriate or possible, information is supported by pictorial or concrete cues e.g. *short, simple instructions on how to turn a laptop on.*
- Scaffolded questions from adults and orally rehearsing thoughts with an adult
- Where appropriate or necessary, pre-teaching core vocabulary or concepts
- Resources that support reduced cognitive load e.g. illustrating the pathway of coding

For children with very high needs, they may require additional resources such as unplugged activities – these are activities undertaken away from the computer in order to teach key concepts such as repetition and selection. They are supported with additional teaching assistant time that is proportioned to enable children to succeed in this subject whilst promoting independence.

