

# The curriculum explained...

Our curriculum design is based on evidence from cognitive science; three main principles underpin it:

1. Learning is most effective with spaced repetition (interleaved processing)
2. Interleaving helps pupils to discriminate between topics and aids long-term retention.
3. Retrieval of previously learned content is frequent and regular, which increases both storage and retrieval strength.

In addition to the three principles we also understand that learning is invisible in the short-term and that sustained mastery takes time.

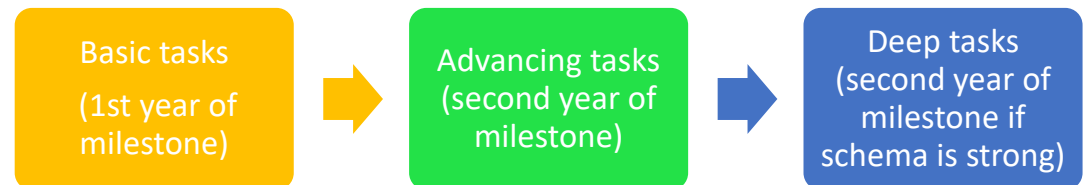
Some of our content is subject specific, whilst other content is combined in a cross-curricular approach (mini-adventures).

The impact of our curriculum is that by the end of each Milestone, the vast majority of pupils have sustained an advanced level of the content and elements of a mastery that is shown through that of 'remembering, recalling and fluency of learning'. Some pupils may have a greater depth of understanding. We track carefully to ensure pupils are on track to reach the expectations of our curriculum.

We ask our 4 key questions in our lessons to ensure children base their learning on what they already know to create the memory links, therefore encouraging the transfer of learning to the long-term memory:

- What do I need to recall?
- What am I learning?
- Why am I learning it?
- How have I been successful?

Through proof of progress tasks, pupils will be given these tasks throughout the learning process to deepen the connections in a scheme. The way in which the schema works is:



It is important to recognise that children will not 'work through' these in one exploration within a mini-adventure, instead they are to be utilised to build that long term memory over the whole milestone timescale.

## **Sustained Mastery**

Nothing is learned unless it rests in pupils' long-term memories. This does not happen, and cannot be assessed, in the short term. Assessment, therefore answers two main questions: 'How well are pupils coping with curriculum content?' and 'How well are they retaining previously taught content?'



# Computing

## INTENT

At SSPP, we want to equip our children with the skills and creativity to change the world. They must use a wider range of skills from maths, d & T and science in order to understand computing systems. We want them to be digitally literate on a range of systems and platforms so that they can be active participants in the digital world. Developing digital resilience is a key aspect of the curriculum. Our children are equipped to recognise and overcome challenges of the modern, digital world and have opportunities across our blended curriculum to discuss and challenge behaviours and issues.

## Characteristics of a Techie

- Competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects.
- The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.
- An understanding of the connected nature of devices.
- The ability to communicate ideas well by using applications and devices throughout the curriculum.
- The ability to collect, organise and manipulate data effectively

## National curriculum: 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

## IMPLEMENTATION

Our pupils should be able to organise their knowledge, skills and understanding around the following learning hooks:

- To code
- To connect
- To communicate
- To collect

These key concepts, underpin learning in each milestone. This enables pupils to reinforce and build upon prior learning, make connections and develop subject specific language.

## IMPACT

Through the explicit teaching of computing skills and repeated through different contexts, both the teachers and the pupils assess their learning continuously throughout the lessons. As a school we use Purple mash for much of the computing curriculum and this holds an assessment tool to show key learning and coverage of each student. At the end of each term, we use the national curriculum framework and skills grids, alongside evidence of children's work to assess their current progress through our electronic tracking system that will, over time, show an informed judgement about the depth of learning and progress made.

## Computing overview - what is taught and when...

	Milestone 1	Milestone 2	Milestone 3
To code	<ul style="list-style-type: none"> <li>Control motion by specifying the number of steps to travel, direction and turn</li> <li>Add text strings, show and hide objects and change the features of an object.</li> <li>Select sounds and control when they are heard, their duration and volume.</li> <li>Control when drawings appear and set the pen colour, size and shape.</li> <li>Specify user inputs (such as clicks) to control events.</li> <li>Specify the nature of events (such as a single event or a loop).</li> <li>Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?)</li> </ul>	<ul style="list-style-type: none"> <li>Use specified screen coordinates to control movement.</li> <li>Set the appearance of objects and create sequences of changes.</li> <li>Create and edit sounds. Control when they are heard, their volume, duration and rests.</li> <li>Control the shade of pens.</li> <li>Specify conditions to trigger events.</li> <li>Use IF THEN conditions to control events or objects.</li> <li>Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).</li> <li>Use the functions define, set, change, show and hide to control the variables.</li> <li>Use the Reporter operators () + (), ()-(), ()*(), ()/()</li> </ul>	<ul style="list-style-type: none"> <li>Set IF conditions for movements. Specify types of rotation giving the number of degrees.</li> <li>Change the position of objects between screen layers (send to back, bring to front).</li> <li>Upload sounds from a file and edit them.</li> <li>Add effects such as fade in and out and control their implementation.</li> <li>Combine the use of pens with movement to create interesting effects.</li> <li>Set events to control other events by 'broadcasting' information as a trigger</li> <li>Use IF THEN ELSE conditions to control events or objects.</li> <li>Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.</li> <li>Use lists to create a set of variables.</li> <li>Use the Boolean operators (&lt;(), ()=(), ()&gt;(), ()and(), ()or(), ()not()) to define conditions Pick Random () to (), join ()(), letter ()of(), length of(), ()mod()this reports the remainder, after a division calculation, round ()</li> </ul>
To connect	<ul style="list-style-type: none"> <li>Participate in class social media accounts.</li> <li>Understand online risks and the age rules for sites.</li> </ul>	<ul style="list-style-type: none"> <li>Contribute to blogs that are moderated by teachers.</li> <li>Give examples of the risks posed by online communications.</li> <li>Understand the term 'copyright'.</li> <li>Understand that comments made online that are hurtful or offensive are the same as bullying.</li> <li>Understand how online services work.</li> </ul>	<ul style="list-style-type: none"> <li>Collaborate with others online on sites approved and moderated by teachers.</li> <li>Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems.</li> <li>Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder</li> <li>Understand the effect of online comments and show responsibility and sensitivity when online.</li> <li>Understand how simple networks are set up and used.</li> </ul>

To communicate	<ul style="list-style-type: none"> <li>• Use a range of applications and devices in order to communicate ideas, work and messages.</li> <li>• Begin to use touch typing software in order to use a keyboard successfully</li> </ul>	<ul style="list-style-type: none"> <li>• Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.</li> <li>• Use word, publisher and PowerPoint office 365 to produce and document learning in the wider curriculum using transition skills, font and size, background and adding images.</li> </ul>	<ul style="list-style-type: none"> <li>• Choose the most suitable applications and devices for the purposes of communication</li> <li>• Use many of the advanced features in order to create high quality, professional or efficient communications.</li> </ul>
To collect	<ul style="list-style-type: none"> <li>• Use simple databases to record information in areas across the curriculum</li> </ul>	<ul style="list-style-type: none"> <li>• Devise and construct databases using applications designed for this purpose in areas across the curriculum.</li> </ul>	<ul style="list-style-type: none"> <li>• Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner</li> </ul>