

Villiers Primary School Computing Curriculum



Intent, Implementation & Impact

Intentions of the curriculum

A high-quality computing education equips pupils to use computational thinking and creativity to understand the world around them and gives them the necessary skills to revolutionise their digital surroundings. Computing is apparent, and is arguably essential, in everyone's daily life and has deep links with Mathematics, Science, and Design and Technology. Furthermore, it provides insights into both natural and artificial systems. The fundamentals of computing is computer science, in which pupils are taught the principles of information and computation - how digital systems work - and how to implement this knowledge into programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs and systems spanning a wide range of content. Computing also ensures that pupils become digitally literate; affording them the ability to use and express themselves and develop their ideas at a level suitable for further studies, the future workplace and as active participants in an exponentially-expanding digital world.

What children should know by the time they leave – Aims of the curriculum

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 – The Shape, Plan, Sequence and Structure of the curriculum

EYFS

Details are available in the EYFS Statement of Intent

Key skills introduced in the EYFS are:

- Operation of simple equipment
- Handling of real-life technological devices or objects
- Interacts with a simple software-based program on a computer or device
- Uses ICT hardware to interact with age-appropriate computer software.

Key Stage 1

Building on the skills obtained during EYFS, children in KS1 are taught to understand that programs, apps and software they use are simply a set of instructions created and built in such a way that all possible outcomes of a person using the program or software are satisfied. Through this, they can develop an appreciation for algorithms and logic and can begin to predict the behaviour of a program or piece of software. Children will also use technology to begin exploring their creativity across a range of subjects to create, organise, store, manipulate and retrieve digital content whilst developing their flair when using digital media. Children will also gain an appreciation of the importance of using technology safely and respectfully through personal privacy and recognising where to go if they need help or support.

National Curriculum aims for KS1 include:

- 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.

Key vocabulary:

algorithms, coding, data, debug, execute, function, hardware, input, instructions, Internet, logic, output, program, repeat, software, system, World Wide Web.

Key Stage 2

Most aspects of the KS2 curriculum are an advancement on the fundamental skills taught in KS1. For example, children are taught to design and create programs to accomplish specific goals by adding variables and decomposition into their programming knowledge. In addition to this, an understanding of how computer networks work, including the internet, is taught including an appreciation for how this offers communication and collaboration. With this knowledge, children can also gain a deeper appreciation for how specific aspects of the digital world work, for example, search engines and specific software packages. Throughout KS2, over-teaching of E-Safety and the acceptable and unacceptable use of technology is reinforced, as well as the range of ways concerns can be reported about content and contact.

National Curriculum aims for KS2 include:

- 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.

Key vocabulary:

abstraction, algorithms, binary, coding, compile, data, debug, decomposition, execute, function, hardware, input, instructions, Internet, logic, network, output, program, repeat, selection, sequence, software, system (Operating System), variable, World Wide Web.

**What values have guided your decisions about the curriculum you have in place?
How does your curriculum reflect national policy (for example, British values and PSHE)?**

The Computing curriculum is designed to support the Villiers attitudes to learning, which represent the core British Values as well as the needs of the Villiers community. We develop drive and ambition by teaching the children how software developers started in the same way – by exploring the digital technology available to them. We develop resilience and reflectiveness by setting challenging work and maintaining high expectations of each child as an individual. The children work collaboratively to analyse examples of their programming or creative media whilst learning to share their ideas confidently, thus benefiting from the views, experiences and opinions of others developing respect and tolerance. Through cross-curricular research, our children have opportunities to explore different cultures and people relating to the digital world.

How does your curriculum reflect your school's context?

Pupils are taught using a range of well-known software including Microsoft's Office package as well as a range of apps including GarageBand, iMovie and Scratch to name a few. This software enable children to be taught skills for life and affords them the opportunity explore their talents alongside developing more specific skills in coding and programming. Being located in a quickly developing technological part of the country, where cyber-crime is on the increase, children are taught the vital importance of online safety, delivered at an age-appropriate level throughout their time at Villiers. Vocabulary is embedded through lessons as is the ability to use technology across the curriculum; progressing children's learning in all areas of what we teach. We seek to equip our children with the skills which will open the doors of opportunity to them in further education and beyond so that when the time comes, the choice is theirs.

To what extent have you made these objectives clear? Does everybody know them?

At Villiers, we believe in personal development for all members of the school community. Working alongside Squirrel Learning and infrastructure support from S4S, all interested parties associate with the Computing curriculum work together to develop new initiatives across school. Careful consideration is put into these plans and feedback from all quarters is reviewed. Learning walks and lesson observations ensure assess if these objectives are being met and termly reviews of evidence work demonstrates that this intent is being implemented. CPD is also offered through Staff Meetings, by experts joining collaboratively with Class Teachers in lessons and through courses provided by Squirrel Learning.

How does it cater for disadvantaged and minority groups? Make sure these pupils aren't 'shut out' of pursuing subjects they wish to study because of too sharp a focus on exam results.

The beauty of computing is that it relies on a digital language of its own which can be explored and discovered by all through simple touch and tap. All children are monitored during sessions and are given any additional support they require.

Villiers is determined to provide additional support, resources and motivational strategies to ensure that all children can read to the highest possible level by the time they complete Year 6.

Curriculum Impact

By the end of each Key Stage, pupils are expected to know, apply and understand the matters, skills and processes set out in the objectives of the 2014 National Curriculum. At Villiers, we use summative assessment, using the National Curriculum objectives, to determine children's understanding and inform teacher's planning. Each part of the curriculum and associated scheme of work is reviewed on a termly basis by the subject leader.