



Computing Policy

Our Vision

We want Virginia Primary School to be a community of happy, confident, motivated lifelong learners. We want our children to be successful citizens who value themselves and each other. Therefore, we are continually striving to ensure that we nurture, challenge and enable each and every one to be the very best they can be in all areas of school life.

Rights Respecting School

We are a Right Respecting School and this policy supports the following articles from the United Nations on the Convention on the Rights of a Child:

- Article 13: freedom of expression
- Article 14: freedom of thought, belief and religion
- Article 23: children with a disability
- Article 28: right to an education
- Article 29: goals of education

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Vision

The ways we learn, work, communicate, access information and spend our leisure time have all been transformed as digital technology has become part of everyday life and work. We want our pupils to be able to navigate this digital society safely, confidently and successfully.

Aims

To ensure this vision is met we aim to deliver a computing curriculum that supports pupils to:

- Understand the key concepts of Computing
- Develop skills in computational thinking, logical reasoning and programming
- Develop a resilient, adaptive and reflective approach to programming and coding
- Work collaboratively together to solve problems creatively using digital technology
- Talk about their use of technology with confidence and appropriate vocabulary
- Understand of the history and role of technology in the wider world
- Navigate the online world safely, respectfully and confidently, knowing when and how to get help

INTENT – WHAT WE WANT TO TEACH

Curriculum Content and Progression

Early Years Framework

Although technology is no longer a specific component of the Early Learning Goals it is expected that children will learn about and use appropriate digital technology across all Areas of Learning in the EYFS.

National Curriculum

In Key stage 1 and 2 we follow the National Curriculum for Computing 2014 and ensure that all statutory requirements are met at each Phase/Key Stage and in each year group.

The curriculum has been divided into three main strands in line with the **Computer at School (CAS)** framework created in partnership with the DfE.

The three content strands are **Digital Literacy**, **Information Technology** and **Computer Science**.

The curriculum strands have been further divided into seven areas that are repeated and built upon each year from Year 1 to 6.

The seven areas are:

- Logical Thinking and Algorithms
- Programming and Problem Solving
- Finding Information
- Data Handling
- Create and Communicate
- Using Technology Safely and Responsibly
- Networks and Technology

Computing in the National Curriculum: Key Strands and Categories			
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.			
The national curriculum for computing aims to ensure that all pupils: <ul style="list-style-type: none">• 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			
Strand	Categories	Key Stage 1	Key Stage 2
Digital Literacy	Create and Communicate	• use technology purposefully to create digital content	• select, use & combine a variety of software (including internet services) on a range of digital devices to design & create a range of content that accomplish given goals including presenting information
	Using Technology Safely and Responsibly	• use technology safely & respectfully • know how to keep personal information private • identify where to go for help & support when they have concerns about content or contact on the internet or other online technologies	• use technology safely, respectfully & responsibly • recognise acceptable & unacceptable behaviour • identify a range of ways to report concerns about content & contact
Information Technology	Data Handling	• use technology purposefully to organise, store, manipulate & retrieve digital content	• select, use & combine a variety of software (including internet services) on a range of digital devices to design & create a range of programs and systems that accomplish given goals, including collecting and analysing data
	Networks and Technology	• recognise common uses of information technology beyond school	• understand computer networks including the internet • know how they can provide multiple services, such as the World Wide Web • understand the opportunities they offer for communication & collaboration
Computer Science	Finding Information	• use technology purposefully to retrieve digital content	• select, use & combine a variety of software (including internet services) on a range of digital devices to design & create a range of programs and systems that accomplish given goals, including collecting and evaluating information • use search technologies effectively • appreciate how results are selected/ranked • be discerning in evaluating digital content
	Logical Thinking and Algorithms	• understand what algorithms are • understand how algorithms are implemented as programs on digital devices • use logical reasoning to predict the behaviour of simple programs	• solve problems by decomposing them into smaller parts • use logical reasoning to explain how some simple algorithms work
	Programming, Coding and Problem Solving	• understand that programs execute by following precise & unambiguous instructions • create & debug simple programs	• use sequence, selection & repetition in programs • work with variables & various forms of input & output • design, write & debug programs that accomplish specific goals • controlling or simulating physical systems • detect & correct errors in algorithms & programs

By the end of Key Stage 2, all pupils should be able to

- Understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. (CS)
- Analyse problems in computational terms and have repeated practical experience of writing computer programs in order to solve such problems. (CS)
- Evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems. (IT)
- Be responsible, competent, confident and creative users of information and communication technology. (DL)

IMPLEMENTATION – HOW WE ARE GOING TO TEACH IT?

Equal Opportunities and Inclusion

We ensure that all children have access to the Computing using adaptive teaching strategies that include:

- Carefully planned and targeted use of additional adult support
- Use of differentiated resources, including writing frames and scaffolds, where necessary
- Use of paired and group work to support children to reach greater depth

We ensure that learning in Computing is inclusive and that it:

- Supports positive attitudes to the development of Computing and ICT in different cultures
- Provides good role models and resources that emphasise equality, diversity and inclusion
- Reflects the achievements of women in STEM subjects and encourages girls to take part

Computing Scheme of Work

The school uses a bespoke Computing Scheme of Work written by the Computing subject lead.

Computing is taught discretely either in weekly lessons or blocks of lessons.

There are termly units of work with a focus on Coding and Programming alongside other aspects of the Computing curriculum

Cross-Curricular ICT

Some aspects of the Computing Curriculum, in the Digital Literacy and Information Technology Strands can be used to support other curriculum areas. These include Finding Information Online, Data Handling and Creating and Communicating with ICT. The specific skills in these areas will be initially covered as part of discrete Computing lessons and can then be consolidated across the curriculum.

Online Safety

The Using Technology Safely and Responsibly strand is taught in a series of discrete Computing units across the year but is also part of other areas of learning, including PHSE, Citizenship and Relationship Education. The knowledge and skills taught in each area is mapped and co-ordinated to avoid repetition. Learning in this area is also considered to be a part of the safeguarding duty and is referenced in the *Safeguarding Policy* as well as the *Online Safety for Pupils Policy*.

Planning

Detailed **Medium-Term plans** are provided as part of the **Computing Scheme of Work** for each unit.

Each unit contains between 3 and 5 sessions, and includes:

- National Curriculum Objectives
- Skills Learning Objectives (Skills)
- Suggested Lesson Activities
- Key vocabulary
- Knowledge Objectives
- Teaching slides with resources, tools and web links.

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Teaching and Learning

Using Digital Devices

It is expected that the majority of Computing and ICT lessons will involve pupils using a digital device.

Examples of digital devices include:

- Chromebook laptop devices
- Desktop computers and laptops
- Digital tablets
- Data Loggers
- Programmable Robots
- Digital Sound Recording devices
- Digital cameras and video recorders
- Programmable construction kits (Lego)

Unplugged Lessons

Some Computing lessons and lessons will be 'unplugged'. Unplugged activities focusing on computing concepts processes without using a digital device.

Characteristics of good Computing teaching

A range of teaching and learning styles will be reflected in teachers' planning, assessment and classroom practice. These might include:

- Demonstrating Computing skills and concepts to a group of pupils or the whole class
- Leading a group or class discussion about the benefits and limitations of ICT in the wider world
- Working with pupils using digital devices to support and scaffold practical activities and teach skills

Pupils might engage in:

- Individual, paired or group work developing and practicing Computing and ICT concepts and skills
- Collaborative and co-operative activities in pairs or groups.
- Guided discussion and evaluation of work-in-progress and finished work.
- Evaluating their own and others work and giving written and verbal feedback

Adaptive Teaching

The Computing and ICT Scheme of Work provides learning objectives across a phase rather than a single year group to allow differentiation and matching. Teaching assistants and other adults provide support.

Pupil Outcomes

Outcomes from Computing lessons, including prepared lesson activity sheets and screenshots are kept in the pupil Computing Book. Screenshots are annotated by pupils with explanation, reflection and self-assessment. The also add notes, vocabulary and diagrams etc. This book builds into a reference resources (rather like an Art sketchbook) for pupils who want to return to prior learning when revisiting a topic or theme.

Language and Vocabulary

Pupils are taught the correct subject specific and technical vocabulary consistently across the school and are given opportunities to consolidate their understanding e.g. equipment and displays are appropriately labelled.

IMPACT – HOW WE KNOW CHILDREN ARE LEARNING

Computing Marking and Assessment

We assess pupil learning and attainment in Computing in a variety of ways

Formative Assessment and Marking

Computing is assessed at the point of learning using the school's assessment and marking procedures. See the Assessment policy for more information

Computing Knowledge quizzes

Cognitive Science tells us that knowledge retention can be supported by asking pupils to recall their learning sometime after the topic has been taught. To this end we use knowledge quizzes at the end of Computing units, and also after some time has passed. These quizzes are delivered using Google classroom. In KS1 the quizzes are delivered as a whole class or in small groups with an adult. In KS2 the quizzes are delivered individually to pupils. The quiz results can be viewed immediately, and common misconceptions or misunderstandings corrected,

Pupil Voice Interviews

The Computing Lead meets with children from each year group twice during the school year and asks them questions about their learning. Pupils are encouraged to recall information, and also to use their Computing books as a reference source to trigger recall. Class teachers are present at these meetings which provide them with a valuable insight into pupil's understanding of the Computing concepts covered and their ability to describe, explain and reflect on their learning using subject specific vocabulary.

Pupil Self-Assessment

There will be opportunities for pupils to reflect on their learning in discussion with the teacher and their peers, and in written self-assessment statements in their Science books.