Computing

Cavendish Community Primary School

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Date created: October 2023

To be reviewed: October 2026

VISION STATEMENT

To enable pupils to gain confidence with the use of technology so that they have the knowledge, skills and ability to face the challenges of a rapidly changing technological world

INTRODUCTION

At Cavendish Community Primary School, we value each and every child and the contribution they make to our school. Consequently, we aim to ensure that every child achieves their full potential and make good progress based on their different starting points in accordance with their ability.

The National Curriculum 2014, outlines that:

> *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.*

Computing is a key skill within school and a life skill to be utilised throughout our daily experiences. Today's world is filled with a variety of technology, so the computing curriculum intends to equip our pupils with a powerful set of tools to be able to understand and function in an ever-changing technological world. These tools include information technology, digital literacy and computer science. Therefore, we endeavour to develop a positive attitude towards computing that will improve children's confidence as they journey through their lives.

THE INTENT OF THE COMPUTING CURRICULUM

At Cavendish, we want our children to leave our school competent with a range of different technologies, knowing how to use them creatively and imaginatively for different purposes. It's important to us that children understand the dangers that technology can bring but are able to navigate these confidently and critically question information (and their sources) found online as a force of habit. Pupils should leave Cavendish as digital leaders, passionate about their use of technology and ready to work in a modern world with its growing technologies.

RATIONALE

The [National Curriculum for Computing](#) (2014) describes in detail what pupils must learn in each key stage. It ensures continuity, progression and high expectations for attainment in computing.

At Cavendish, we use the [National Curriculum for Computing](#) (2014) as the basis of our computing programme. This is supplemented by the [Switched On Computing](#) to ensure that all our pupils achieve a good grasp of the key concepts of Computing, at an age appropriate level. The range of technologies that we have in school enable our pupils to develop the skills, understanding and confidence to help them function effectively in society. Assessment for learning (AfL), emphasis on investigation and problem solving, the development of computational thinking and the development of teacher subject knowledge are therefore essential components of our approach to this subject.

AIMS AND OBJECTIVES

As we place our pupils at the centre of our curriculum, we have several hopes and aspirations for them as they progress through the Computing curriculum. Therefore, at Cavendish, our Computing curriculum aims to promote and develop the following attributes in all our pupils:

- a positive 'can do' attitude to computing as an interesting and attractive part of the curriculum;
- the ability to think clearly and logically, with confidence, flexibility and independence of thought;
- a deeper understanding of computing through a process of enquiry, experiment and investigation;
- the ability to apply knowledge, skills and ideas in real life contexts outside the classroom, and become increasingly aware of the uses of computing in the wider world;
- an ability and inclination to work both alone and cooperatively when solving problems and to reason, think logically and work systematically and accurately;
- personal qualities such as perseverance, independent thinking, cooperation and self-confidence through a sense of achievement and success;
- an appreciation of the creative aspects of computing and an awareness of its aesthetic appeal;
- competence and confidence in computing knowledge, concepts and skills; and
- have the building blocks in place and to provide a solid foundation to lead onto secondary, further and higher education.

This supports the aims of the [National Curriculum for Computing](#) (2014), which aims for pupils to:

- *understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation*
- *analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems*
- *evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems*
- *be responsible, competent, confident and creative users of information and communication technology.*

Our main objectives, along with those from the [National Curriculum for Computing](#), are for our pupils to:

- Demonstrate an understanding of information technology, digital literacy and computer science.

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- Solve problems by being resilient, steadfast and systematic in their approach.
- Employ the school's values (equality, respect, positivity, responsibility, kindness, courage) when interacting with others as well as when they are using different software and hardware.
- Apply their creative skills in computing and can choose and evaluate the best devices to use.
- Take practical measures to ensure that they keep themselves safe when using the internet.

To provide adequate time for developing these aims and objectives, computing is taught weekly and discretely for at least 60 minutes in KS1 and KS2 based on the long term plan. Teachers of EYFS ensure that the children learn through a mixture of adult-led and child-initiated activities, both inside and outside the classroom. In order to provide a breadth of experience with the use of computing, the application of skills is linked across the curriculum where appropriate.

IMPLEMENTING THE COMPUTING CURRICULUM

SCHEME USED AT CAVENDISH

Computing is part of the National Curriculum and we use the objectives from this document to support planning and to assess children's progress.

LONG TERM PLANNING

The National Curriculum, Barefoot Computing and Switched On Computing provide the long term planning for the computing taught in school. From this, a detailed, structured curriculum is mapped out across all phases and year group, ensuring continuity and supporting transition.

MEDIUM TERM PLANNING

In EYFS, we use Barefoot Computing and in Y1 - Y6, we use Switched On Computing's medium term plans. We take into account Development Matters in the Early Years Foundation Stage (EYFS) (Number, Shape Space & Measure) and our own bespoke curriculum, which is tailored alongside Barefoot Computing. Teachers use their medium term plans to outline the areas of computing that will be taught during the term to ensure coverage of the National Curriculum.

SHORT TERM PLANNING

Lessons are planned using a common planning format and are monitored by either the headteacher, computing subject leader or assistant headteacher.

Within short term planning, clear success criteria for each learning objective taught are created – demonstrating the progression needed to reach and exceed the objective. This will enable the class teacher to follow a clear and systematic teaching sequence, where input and activities are carefully considered based on children's readiness. All children work on the same objective, but at their level and adaptive teaching is achieved through support or resource. Planning, where possible, will therefore involve real life contexts for computing, where children are problem solving with a purpose in mind.

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OVERVIEW OF UNITS

Computing Curriculum Coverage

Information Technology   **Digital Literacy**   **Computer Science**

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	1.1 We are treasure hunters	1.4 We are publishers	1.4 We are publishers	1.5 We are rhythmic	1.3 We are digital artists	
Year 2	2.1 We are astronauts		2.3 We are photographers		2.6 We are Zoologists	2.4 We are safe researchers
Year 3	3.1 We are programmers	3.5 We are Co-Authors		3.3 We are presenters	3.4 We are who we are	
Year 4	4.1 We are software developers	4.2 We are Makers	4.4 We are bloggers		4.6 We are Meteorologists	4.6 We are Meteorologists
Year 5	5.5 We are adventure gamers	5.1 We are game developers	5.3 We are architects		5.4 We are web developers	5.4 We are web developers
Year 6	6.2 We are computational thinkers	6.5 We are advertisers	6.3 We are publishers		6.4 We are connected	
	Digital literacy ongoing					

PROGRESSION OF SKILLS IN COMPUTING

Key Stage 1

Disciplines	NC Statement	KS1
Computer Science	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Understand what algorithms are (1.1, 1.2, 1.5, 2.1, 2.2) Understand that algorithms are implemented as programs on digital devices (1.1, 1.2, 1.5, 2.1, 2.2) Understand that programs execute by following precise and unambiguous instructions (1.1, 1.2, 1.5, 2.1, 2.2)
	Create and debug simple programs	Create simple programs (1.1, 1.5, 2.1) Debug simple programs (1.1, 1.5, 2.1)

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		Use logical reasoning to predict the behaviour of simple program	Use logical reasoning to predict the behaviour of own programs (1.1, 2.1, 2.2)
Information Technology		Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Use technology purposefully to create digital content (1.2, 1.3, 1.4, 1.5, 1.6, 2.3, 2.4, 2.5, 2.6) Use technology purposefully to store digital content (1.2, 1.3, 1.4, 1.5, 1.6, 2.3, 2.4, 2.5, 2.6) Use technology purposefully to retrieve digital content (1.2, 1.3, 1.4, 1.5, 1.6, 2.3, 2.4, 2.5, 2.6) Use technology purposefully to organise digital content (1.2, 1.3, 1.4, 1.5, 1.6, 2.3, 2.4, 2.5, 2.6) Use technology purposefully to manipulate digital content (1.2, 1.3, 1.4, 1.5, 1.6, 2.3, 2.4, 2.5, 2.6)
Digital Literacy		Recognise common uses of information technology beyond school	Recognise common uses of information technology at home (1.2, 1.3, 1.4, 1.5, 1.6, 2.2, 2.3, 2.4, 2.5, 2.6) Recognise common uses of information technology outdoors (1.2, 1.3, 1.4, 1.5, 1.6, 2.2, 2.3, 2.4, 2.5, 2.6)
		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	Use technology safely (1.4, 1.6, 2.2, 2.3, 2.4, 2.5, 2.6) Keep personal information private (1.4, 1.6, 2.2, 2.3, 2.4, 2.5, 2.6) Use technology respectfully (1.4, 1.6, 2.2, 2.3, 2.4, 2.5, 2.6) Identify where to go for help and support when they have concerns about content or contact on the Internet or other online technologies (1.4, 1.6, 2.3, 2.4, 2.5, 2.6)

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Key Stage 2

Disciplines	NC Statement	KS2
Computer Science	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Write programs that accomplish specific goals (3.1, 4.1, 4.2, 5.1, 5.6, 6.1, 6.2, 6.6) Design programs that accomplish specific goals (3.1, 4.1, 4.2, 5.1, 5.6, 6.1, 6.2, 6.6) Debug programs that accomplish specific goals (3.1, 3.2, 4.1, 4.2, 5.1, 5.6, 6.1, 6.2, 6.6) Control or simulate physical systems (3.1, 3.2, 4.2, 5.1, 5.6, 6.1, 6.6) Solve problems by decomposing them into smaller parts (3.1, 4.1, 4.2, 4.6, 5.1, 5.3, 5.6, 6.1, 6.6)
	Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Use sequence in programs (3.1, 3.2, 4.1, 4.2, 4.3, 4.5, 5.1, 5.6, 6.1, 6.2) Use selection in programs (3.2, 4.1, 4.2, 4.5, 5.1, 5.6, 6.1, 6.2) Use repetition in programs (3.2, 4.1, 4.2, 4.3, 4.5, 5.1, 5.6, 6.1, 6.2) Work with variables (3.1, 3.2, 4.1, 4.2, 4.5, 4.6, 5.1, 5.6, 6.2) Work with various forms of input and output (3.1, 3.2, 4.1, 4.2, 4.3, 4.5, 4.6, 5.1, 5.6, 6.1, 6.2)
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Use logical reasoning to detect and correct errors in programs (3.1, 3.2, 4.1, 5.1, 5.2, 6.1, 6.2) Use logical reasoning to explain how some simple algorithms work (3.2, 4.1, 4.6, 5.1, 5.2, 6.1, 6.2) Use logical reasoning to detect and correct errors in algorithms (3.1, 3.2, 4.1, 5.1, 5.2, 6.1, 6.2)
	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	Understand how computer networks can provide multiple services, such as the World Wide Web (3.5, 3.6, 4.4, 5.2, 5.4, 6.3, 6.4) Understand computer networks, including the Internet (3.5, 3.6, 4.4, 5.2, 5.4, 6.3, 6.4)
Information Technology	Use search technologies effectively, appreciate how results are selected and	Use search technologies effectively (3.5, 4.6, 5.3, 5.5, 6.3, 6.4, 6.5)

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	ranked, and be discerning in evaluating digital content	Appreciate how search results are selected (3.5, 4.6, 5.3, 6.3, 6.4, 6.5) Appreciate how search results are ranked (3.5, 4.6, 5.3, 6.3, 6.4, 6.5)
	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	Select, use and combine software (3.3, 3.4, 3.6, 4.3, 4.5, 4.6, 5.3, 5.4, 5.6, 6.3, 6.5, 6.6) Design and create content (3.3, 3.4, 3.6, 4.3, 4.4, 4.5, 4.6, 5.3, 5.4, 5.5, 5.6, 6.3, 6.5, 6.6) Design and create systems (3.3, 3.6, 4.6, 5.3, 5.4, 5.6, 6.3, 6.5, 6.6) Collect, analyse, evaluate and present data (3.6, 4.6, 5.4, 6.5, 6.6) Collect, analyse, evaluate and present information (3.3, 3.4, 4.4, 5.3, 5.4, 5.5, 5.6, 6.3, 6.5, 6.6)
Digital Literacy	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	Understand the opportunities computer networks offer for communication (3.5, 3.6, 4.4, 5.2, 5.4, 6.3, 6.4) Understand the opportunities computer networks offer for collaboration (3.5, 3.6, 4.4, 5.2, 5.4, 6.3, 6.4)
	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Be discerning in evaluating digital content (3.5, 4.3, 4.6, 5.3, 5.4, 6.3, 6.4, 6.5)
	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	Use technology responsibly (3.3, 3.4, 3.5, 3.6, 4.3, 4.4, 5.2, 5.4, 5.5, 6.3, 6.4, 6.5) Identify a range of ways to report concerns about contact (3.5, 3.6, 4.3, 4.4, 5.2, 5.4, 6.5) Identify a range of ways to report concerns about content (3.5, 3.6, 4.3, 4.4, 5.2, 5.4, 6.4, 6.5) Recognise acceptable/unacceptable behaviour (3.5, 3.6, 4.3, 4.4, 5.2, 5.4, 6.4, 6.5)

IMPACT

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On leaving Cavendish Community Primary School, our children will have developed confidence in using different technologies and become increasingly aware of how to stay safe online. They will be able to transfer the knowledge and skills that they have gained to face the challenges of a rapidly changing technological world through the high expectations they have of themselves and what they can achieve. Being competent users of technology, they will be prepared for the next stage and phase of their learning and life.

MONITORING PROCESSES

Along with the assessment processes outlined above, information about pupil progress and the quality of teaching and learning in computing across the school is collected through several monitoring systems. This is conducted through learning walks, pupil dialogues and lesson observations as part of routine SLT monitoring.

MEETING THE NEEDS OF ALL OUR PUPILS

In Cavendish, we incorporate a variety of teaching and learning styles in each computing lesson. All children from EYFS to Y6 are taught in differentiated groups. However, at times children may be required to work in mixed ability groups because we believe that children learn best when they are able to express and share their understanding with others, including their peers. Concepts are often explored together to make relationships explicit and to strengthen pupils' understanding of the interconnectivity of computing concepts and ideas. Therefore, our teachers endeavour to:

- undertake a mastery approach, where adaptation occurs in the *support* and *intervention provided* to different pupils, not in the topics taught
- develop a 'can do' attitude in computing, using the growth mindset approach
- provide same day intervention, where appropriate
- build children's confidence and self esteem
- develop children's independence
- use practical approaches to computing (access to different technologies)
- encourage children to select resources independently to help them in lessons
- challenge children of all abilities by ensuring that activities are appropriately matched to their level of ability and development through careful use of AfL strategies
- develop children's understanding of technical vocabulary
- encourage children to learn from teachers, peers and their own mistakes
- allow children to ask questions as well as answer them
- develop children's critical thinking skills through problem solving, reasoning and arguing and 'debating' contextual issues in computing
- improve children's resilience and a desire to achieve their full potential
- enable children to apply their skills across the curriculum
- plan open and closed tasks, so that all pupils engage in the learning process

<u>INCLUSION IN COMPUTING</u>

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We are committed to ensuring that all pupils are able to access a broad, high quality curriculum. In order to meet the additional needs of individual SEND pupils at Cavendish, we tailor resources, organise the classroom environment and buy in further resources as and when the need arises.

SPECIAL EDUCATIONAL NEEDS and DISABILITY (SEND)

The weekly computing lessons are inclusive to pupils with SEND. When planning, teachers give due consideration to children's targets on their one-page profiles. These targets may be worked upon within the lesson as well as on a 1:1 or small group basis outside the computing lesson. Focused intervention programmes are available in school to help children with gaps in their learning. These are delivered on a 1:1 or small group basis by trained support staff and overseen by the class teacher.

Within the weekly computing lesson, teachers must not only provide activities to support children with SEND, but also activities that provide appropriate challenges for children who are high achievers in computing. Good practice dictates that it is vital that all children are challenged at a level appropriate to their ability.

Within the National Curriculum for Computing, children of all ages and abilities are catered for. Pupils with SEND will be provided with appropriate work at their level of ability, which will facilitate an extended learning process. Having determined the child's needs, appropriate learning steps will be presented and achievement of these will promote good progress. Liaison will take place with the SENDCo if particular provision is required in an individual learning plan with reference to the SEN Code of Practice as well as the School's SEND Policy.

At the start of each academic year, teachers project expected progress for each child in their class. Assessments confirm the progress the children have made each term towards their predicted targets. Children, who are not making expected progress, will be identified and provided with support in particularly weak areas to boost their learning.

EQUAL OPPORTUNITIES

We incorporate computing into a wide range of cross-curricular subjects. We ensure that all children are able to fulfil their potential regardless of race, religion, disability or gender. Therefore, it is important that:

- our expectations do not limit pupil's achievement.
- we set targets to meet the individual needs of each child and for them to be aware of the next steps in their learning.
- we aim to challenge and extend pupils to help them increase the need for independent thinking.
- we use a range of teaching and learning styles to ensure that all our children have the opportunity to gain computing knowledge and understanding regardless of age, gender, race, class, physical or intellectual ability.

Click here for our Accessibility Policy
Click here for our Equality Scheme

SAFEGUARDING CHILDREN

We promote the safeguarding and wellbeing of all children at all times throughout the curriculum. Our children are given opportunities to develop self-confidence and resilience; they are taught to challenge, question and

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make informed choices; and are given skills to resolve conflicts. Should any pupil make a disclosure, our staff are aware of the safeguarding policy and follow our safeguarding procedure.

Click here for our Safeguarding Policy

PROMOTING RIGHTS, SMSC AND BRITISH VALUES

As a rights respecting school, we want every child to understand and promote the shared values of our school - equality, respect, positivity, responsibility, kindness and courage. Therefore, we aim to promote SMSC and British Values across every aspect of our curriculum and throughout the wider school life. Therefore, we incorporate aspects of spiritual, moral, social and cultural attitude and an understanding of democracy, the rule of law, individual liberty and mutual respect and tolerance of those with different faiths and beliefs and for those without faith in our teaching of computing, where appropriate.

Click here for our Rights Respecting Policy

OPPORTUNITIES FOR OUT OF SCHOOL LEARNING

It is our school's policy to provide parents and carers with opportunities to work with their children at home. Activities may be brief (homework), but are valuable in promoting children's learning in computing. At times, activities are sent home to children in EYFS to 6 as part of our home learning challenges. These can take the form of games, activities or quick written tasks, which we encourage parents/carers to work through with their children.

To develop the children use of technology as a tool to facilitate their learning, each child has a Google Classroom, MyMaths, EdShed, TTRS and Times Table Rockstars username and password. This allows teachers to set tasks for the children to complete both during and after school. These may also be revisited in the children's own time to review and consolidate their learning.

REPORTING TO PARENTS/CARERS

Reports are completed before the end of the summer term and parents/carers are given an opportunity to formally discuss their child's progress at parents' evenings in the autumn and spring terms if they desire. Parents/carers can make an informal appointment to discuss their child's progress at any time over the school year. They are also encouraged and offered support and guidance to facilitate their children's learning of computing.

MONITORING AND REVIEW

Monitoring of the standards of children's work and the quality of teaching in computing is the responsibility of the computing lead alongside members of the senior leadership team. The monitoring of children's progress begins with pupil progress meetings, but continues with the subject leader evaluating further evidence to ensure children are making progress. This monitoring happens through lessons observations, learning walks,

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examination of work, pupil interviews, analysis of assessment results and the assessments used, and through other means depending on what information needs to be gleaned.

The work of the computing lead also involves supporting colleagues in the teaching of computing, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in Cavendish. Consequently, following monitoring activities, feedback is given to staff about how they can strengthen their practice and CPD (professional development) opportunities built in, when necessary. These might take the shape of inputs during staff meetings, coaching, mentoring or by a variety of other means.

Where specific initiatives have been put in place through action planning for school development, these are monitored by the subject leader in order to evaluate their impact. Findings are then reported to the headteacher and governors as part of the subject leader's ongoing report. Opportunities for teachers to review the scheme of work, policy and published materials are also afforded during a variety of meetings.

POLICY REVIEW AND EVALUATION

Evaluation of this policy will be ongoing and will be carried out through a variety of meetings and evaluations. Resources will be audited on a regular basis and proposals for new resources will be discussed with the headteacher and computing lead. Furthermore, this policy is reviewed and updated every three years by the computing lead.

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