Computing Policy

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This policy is based on the Computing programmes of study: Key stage 1 and 2 National Curriculum in England document; see Appendix 1.

Intent, Implementation and Impact

Intent - At Albrighton Primary School and Nursery, we believe that a **broad, rich and creative curriculum** is essential in the education of all pupils. We understand that a high-quality computing education should inspire in pupils a **curiosity** and fascination about technology and prepare them for their next stage in education. Closely linked with our **PSHE** curriculum, we aim to enable our children to become happy, healthy, independent and responsible citizens online. Our computing curriculum will equip pupils with **knowledge** about **computer science, information technology and digital literacy**. Our principle aims for computing are for children to:

- Develop their understanding of technology and how it is constantly evolving.
- Develop their skills and capability which is essential to developing Computer capability.
- Evaluate the benefits and risks of technology and how to manage their use of it **safely and respectfully**.
- Be responsible, competent, confident and **creative** users of information and communication technology.
- Celebrate success in the use of technology.

At Albrighton Primary School we embed computing, in our classrooms, across the whole curriculum and use technology to support those with additional needs. We believe that the **knowledge and skills** that intertwine with computing learning are vital in not only a child's education, but also in their wider life. Our computing curriculum will support pupils to be **prepared for the next stage in their young lives and to live responsibly in a modern, diverse world.**

Implementation - In EYFS children learn through exploratory play, using technological toys and learn that they can make them work by pressing buttons and clicking on icons. They are taught how to complete simple programs which they use to support their phonics and mathematical skills. Through role play, discussion and stories children learn that technology can be used for a range of purposes across home and school. At Key Stages 1 and 2, we follow the National Curriculum Objectives, which have been broken down into the necessary knowledge and skills that need to be taught at each phase. We plan weekly computing lessons using and adapting agreed planning from Teach Computing to focus on maximising children's knowledge acquisition over time. Children will learn about different programmes, coding, online safety, games and creative tools. Where appropriate, meaningful links are made between the computing curriculum and the wider curriculum, especially PSHE. Employing cross-curricular links motivates pupils and supports them to make connections and remember the skills they have been taught. Local links with RAF Cosford and STEM opportunities facilitate challenge for pupils in computing.

Impact - Children will have developed the computing knowledge and skills to help them become confident and competent users of technology. Children's knowledge and skills will develop progressively as they move through the school, not only to enable them to meet the requirements of the National Curriculum but to prepare them to effectively live a modern and diverse world.

We measure the impact of computing through the following methods:

- Assessing children's understanding of the knowledge and linked vocabulary before and after the unit is taught.
- Formative assessment throughout lessons - questioning and AFL tasks to check knowledge and understanding.
- Opportunities to use knowledge in other contexts such as in literacy or PSHE.

- Interviewing the pupils about their learning (pupil voice).
- Moderation staff meetings where there is the opportunity for a dialogue between teachers to understand their class's work.
- Annual reporting of standards across the curriculum.
- High quality discussions around the Learning Objectives and Success Criteria.

Aims of the New Computing Curriculum

The aim of the Computing Curriculum is to develop both skills and knowledge. Children are to be taught computer science and learn about programming, data, algorithms and networks. This enables children to develop an understanding of the principles of computer science. They develop computational thinking. There is also a focus on problem solving: using logic and ideas about systems, patterns (and pattern languages), abstraction and decomposition.

The curriculum puts a clear emphasis on three areas of learning:

Computer Science (CS) - how computers work and how to write algorithms and solve problems to eventually create a computer program.

Information Technology (IT) - how data is represented and managed on computers.

Digital Literacy (DL) - how to understand digital information and interact with it safely and appropriately.

The following table is taken from the Computing at School/NAACE publication for Primary Schools and provides guidance as to what will be covered under each of the three areas.

	KS1	KS2
CS	• 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	• 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 • Appreciate how [search] results are selected and ranked

	KS1	KS2
IT	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Use search technologies effectively • 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
DL	• 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	• Understand the opportunities [networks] offer for communication and collaboration • Be discerning in evaluating digital content • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

The aim of the curriculum is to build an understanding of how computers work and how they can be used in pupils' lives - both in their future employment and in enabling them to be good 21st Century global citizens.

At Albrighton Primary School, we are developing our teaching of computing and are working towards ensuring that pupils have the opportunity to use ICT within the class across a range of subjects. Children have access to both PCs, iPads and Chromebooks. We are constantly exploring the range of software and apps to ensure that children are given the best possible opportunity to access the computing curriculum.

An important part of the teaching and learning is for pupils to find out and share how to keep themselves safe online, E-Safety is embedded into all our Computing lesson and into our wider curriculum.

Non Negotiables for Teaching Staff

The following are minimum expectations for staff when planning and delivering computing lessons and when using information technology across the curriculum. There are also a set of guidelines for pupils which outline the expectations of them when using technology in school.

- Clear objectives and success criteria should be used including subject specific vocabulary, both taken from the progression document.
- Lessons should build on pupils' existing learning and rehearse familiar concepts with the pupils before they move on to something new.

- Computing lessons should be planned to include lots of hands-on activities with a real purpose.
- Sessions should include 'Unplugged activities' to support pupil learning.
- Pupil to pupil learning should be planned and valued.
- Pupils should be given the opportunity to make mistakes and try things out.
- E-safety should be integral to all work in computing.

As in other areas of the curriculum, the computing curriculum requires that children have knowledge and experience in a range of technologies. We must ensure that our teaching and learning continues and enhances prior knowledge and experience that children will bring from home. We will do this through the sharing of planning, having discussions regarding resources and software, regular communication and meetings.

Further explanation and rationale of non-negotiables

Clear objectives and success criteria should be used including subject specific vocabulary, both taken from the progression document.

Computing has a subject-specific vocabulary just like other areas of the curriculum. Some of these words will be totally new perhaps, like 'debug' and others might not be new but have different meanings in the context of computing.

Lessons should build on pupils' existing learning and rehearse familiar concepts with the pupils before they move on to something new.
Familiarity and reinforcement are an important part of using technology enabling pupils to ensure that they are using the correct and most efficient procedures.

Computing lessons should be planned to include lots of hands-on activities with a real purpose.
For example, creating games for friends to play or creating a website to show/share research and learning.

Sessions should include 'Unplugged activities' to support pupil learning.
It is especially important for pupils to understand how technology relates to the real world and how it fits into "real life". Giving children concrete examples. Units often begin with 'Unplugged activities' to engage the children.

Pupil to pupil learning should be planned and valued.
Children should be given the opportunity to find things out for themselves and share their knowledge. Using freely available software means that pupils can download it and practice their skills at home.

Pupils should be given the opportunity to make mistakes and try things out. Trial and error is a major way that pupils learn to program.
Pupils should be given the opportunity to self and peer evaluate and this should be part of overall teacher assessment. When pupils are debugging ready-made code blocks this is a powerful form of learning – it develops the crucial skill of problem solving. This is bit like taking apart a model to understand how it is made and it means that pupils can make changes to the code, like changing the distance a sprite travels or costumes, and see the effect immediately.

E-safety should be integral to all work in computing.
Discussions and exploration of e-safety issues should be embedded into computing sessions. Refer to the 'SMART' acronym used on the Childnet website. Linked into PSHE lessons as discreet teaching.

Non Negotiables for Pupils

- Keep any passwords safe at all times
- Log off properly and ensure machines are switched off where necessary. Headphone wires should be wrapped around headsets and stored correctly.
- Treat equipment with respect – report any breakages to an adult. Be honest!
- Don't say anything electronically that you wouldn't be prepared to say to someone's face
- Mobile phones are not allowed in school (can be left at the school office).
- Don't use images of other people unless you have permission.
- Keep personal information private.
- Only add people you know to your list of friends.
- Only use appropriate games or websites.
- If anything bad happens, tell an adult.
- Children are not allowed to use school computers unsupervised.

Long Term Planning

At Albrighton, we use the Teach Computing scheme of learning as a whole school approach. This covers all elements of the curriculum and has embedded E-Safety into its lessons. Alongside this we celebrate national computer security day, safer internet day and cover E-Safety discreetly in PSHE. Our teachers use this with adaptive teaching. This means that teachers adapt their teaching to make it appropriate for all students in their classroom so each and every child can access the learning and be successful in their learning. For Computing this means that all children will receive Quality First Computing teaching in the classroom and the lesson and resources will be adapted to suit the needs of all pupils. This might take the form of questioning tailored to each individual pupil, targeted support from the teacher or teaching assistant, mixed ability pairs or groupings for children to support and teach each other including the use of a 'driver/navigator' approach.

Assessment and Progression

With the removal of levels from the National Curriculum, we will use "I can" and 'I know' progression statements to assess children's knowledge and understanding. These have been taken from the National Curriculum and put into a progression document using our Teach Computing Scheme. Teachers can assess children directly against the progression document.

E-Safety

Computing and online resources are increasingly used across the curriculum. We believe it is essential for E-Safety guidance to be given to the pupils on a regular and meaningful basis. We continually look for new ways to promote e-safety.

- We provide opportunities within a range of curriculum areas to teach about E-Safety.

- Educating pupils on the dangers of technologies that may be encountered outside school is done informally, when opportunities arise and as part of the curriculum.
- Pupils are taught about copyright and respecting other people's information, images, etc through discussion, modelling, and activities as part of the Computing curriculum.
- Pupils are aware of the impact of online bullying through assemblies and PSHE and know how to seek help if they are affected by these issues. Pupils are also aware of where to seek advice or help if they experience problems when using the internet and related technologies.
- Pupils are taught to critically evaluate materials and learn good searching skills through cross curricular teacher models, discussions and via the Computing curriculum.
- Children are taught the SMART acronym to use when working online.

Time Allocation

Children will receive one hour weekly dedicated computing teaching time focussing on skills development. In addition to this, staff are expected to plan for the use of new technologies in English, Maths and Science lessons and across the curriculum.

Monitoring and Development

Computing will be monitored in line with the school's monitoring policy and the school development plan.

Staff Development

It is recognised that computing is an area of the curriculum that requires detailed technical knowledge and a large investment of time in learning and developing knowledge of new technologies. Where possible, the Computing Lead and visits of the computing technician will support and develop staff knowledge. This will include the provision of after-school training sessions for teaching staff and teaching assistants and the inclusion of a computing element in PD days where appropriate.

Details of courses will be made available to all staff and funding provided in accordance with the school priorities as outlined in the school development plan.

Regular E-Safety training for staff will be provided so that all staff members are knowledgeable and confident in supporting pupils in staying safe on-line.

Equal Opportunities

All children are offered equal opportunities to participate in all areas of the computing curriculum.

Appendix 1: National Curriculum Computing Programme of Study

Computing Programmes of Study: Key Stages 1 and 2
National Curriculum in England

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.

Attainment Targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Schools are not required by law to teach the example content in [square brackets].

Subject Content
Key Stage 1

Pupils should be taught to:

- 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 stage 2

Pupils should be taught to:

- 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.

Appendix 2: Glossary of Terms

This is a glossary of terms taken from our Computing Scheme – Teach computing. These are the key terms teachers will use during their lessons.

Term	Key Stage	Definition
Algorithm	1&2	A precise set of ordered steps that can be followed by a human or a computer to achieve a task
Attribute (property)	1&2	A word or a phrase that can be used to describe an **object** such as its colour, size, or price
Browser	2	SEE: Web browser
Code	1&2	The **commands** that a **computer** can **run**
Code snippet	1&2	A section of a **program** viewed in isolation
Command	1&2	A single instruction that can be used in a **program** to control a **computer**
Computer	1&2	A **programmable** machine that accepts and **processes** **inputs** and produces **outputs** (input, process, output; IPO)
Computer network	2	A group of interconnected computing devices
Computer system	2	A combination of **hardware** and **software** that can have **data input** to it, which it then **processes** and **outputs**. It can be **programmed** to perform a variety of tasks.
Condition	2	A statement that can be either True or False

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Term	Key Stage	Definition
Condition-controlled loop	2	SEE: Loop (condition-controlled)
Count-controlled loop	2	SEE: Loop (count-controlled)
Data	1&2	A letter, word, number etc. that has been collected for a purpose, but **stored** without context
Data set	2	A collection of related **data**
Debugging	1&2	The process of finding and correcting errors in a **program**
Decompose	2	To break down a task into smaller, more achievable steps
Digital device	2	A computer or a device with a computer inside that has been programmed for a specific task
Domain name	2	The part of a **website**'s **URL** that is user friendly and identifies that it is under the control of a particular person or organisation e.g. raspberrypi.org
Execute (run)	2	SEE: Run
Hardware	2	The physical parts of a **computer system**

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Term	Key Stage	Definition
HTML (HyperText Markup Language)	2	A standardised language used to define the structure of **web pages**
Hyperlink	2	(Also: link, weblink) Text or media that when clicked, takes the user to another specified location (**URL**)
Infinite loop	2	SEE: Loop (infinite)
Information	1&2	**Data** put into a context that provides meaning
Information technology	1	The study, use, and development of **computer systems** for storing, processing, retrieving, and sending information
Input	2	**Data** that is sent to a **program** to be **processed**
Input device	2	A piece of **hardware** used to control, or send **data** to, a **computer**
Internet	2	The global system of interconnected **computer networks**
Loop	2	(**Count-controlled**, **condition-controlled**, or **infinite**) **Commands** that repeatedly **run** a defined section of **code**
Loop (condition-controlled)	2	A **command** that repeatedly **runs** a defined section of **code** until a **condition** is met

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Term	Key Stage	Definition
Loop (count-controlled)	2	A **command** that repeatedly **runs** a defined section of **code** a predefined number of times
Loop (infinite)	2	A **command** that repeatedly **runs** a defined section of **code** indefinitely
Network	2	SEE: Computer network
Object	1	Something that can be named and has other **attributes (properties)**, which can be labelled
Object	2	Something that is uniquely identifiable and has **attributes**
Output	2	The result of **data processed** by a **computer**
Output device	2	A piece of **hardware that** is controlled by **outputs** from a **computer**
Procedure	2	A named set of **commands** that can be called multiple times throughout a **program**. This type of **subroutine** does not return a value.
Process	2	A **program**, or part of a **program**, that is running on a **computer**
Program	1&2	A set of ordered **commands** that can be **run** by a **computer** to complete a task

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Property (attribute)	1	A word or a phrase that can be used to describe an **object** such as its colour, size, or price
Repetition	2	Part of a **program** where one or more **commands** are **run** multiple times in a **loop**
Router	2	A device that manages the flow of data between **computer networks**
Run (execute)	1&2	To action the **commands** in a **program**
Selection	2	Part of a **program** where if a **condition** is met, then a set of **commands** is **run**
Server	2	A networked **computer** that manages, **stores,** and provides **data** such as files to other computers
Software	2	The **programs** used to control **computers** and perform specific tasks
Stored (data)	2	**Data** kept digitally so that it can be accessed by a computer
Subroutine	2	A named sequence of **commands** designed to perform a specific task
Switch (network switch)	2	A device that manages the flow of **data packets** within a **computer network**

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Term	Key Stage	Definition
Technology	1	The use of scientific knowledge for practical purposes
URL (Uniform Resource Locator)	2	The address of a file on the **internet**
Variable	2	A named piece of **data** (often a number or text) **stored** in a computer's memory, which can be accessed and changed by a **computer program**
Web	2	SEE: WWW (World Wide Web)
Web address	2	SEE: URL (Uniform Resource Locator)
Web browser	2	A **program** used to view, navigate, and interact with **web pages**
Web page	2	A **HTML** document viewed using a **web browser**
Website	2	A collection of interlinked **web pages**, stored under a single **domain**
WiFi	2	A technology that allows devices to wirelessly access a **network** and transfer **data**
WAP (Wireless Access Point)	2	A network device that allows wireless computing devices to connect to a wired **network**

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Term	Key Stage	Definition
WWW (World Wide Web)	2	A service provided via **the internet** that allows access to **web pages** and other shared files

Signed by Headteacher

Signed by Chair of Governors