



Computing Curriculum Policy

2016

1. Aims

The aim of this policy is to provide an overview of the Computing Curriculum.

The National Curriculum 2014 states that computing is a key skill for everyday life. Computers, tablets, digital and video cameras are a few of the tools that can be used to communicate and present information. Through teaching computing we equip children to participate in a world of rapidly changing technology. We enable them to find, explore, analyse and present information. We also help them develop the necessary skills for using information in a discriminating and effective way. This is a major part of enabling children to be confident, creative and independent learners.

The curriculum aims to ensure that all pupils:

- Can understand and apply the key principles of computer science, including algorithms, logic, data representation and communication.
- Can analyse problems in computational terms and have experience of writing computer programs.
- 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.

The objectives of teaching computing are to enable children:

- To develop capability in finding, selecting and using information.
- To use computing for effective and appropriate communication.
- To monitor and control events, both real and imaginary.
- To apply their computing skills and knowledge to their learning in other areas.
- To explore their attitudes towards computing and its value to them and society in general. For example, to learn about issues of security and personal safety, confidentiality and accuracy (see e-safety policy).
- Develop their understanding of how digital systems work and to become digitally literate individuals.

2. Objectives

Early years:

It is important that all children in the foundation stage are provided with a broad, balanced and play based experience of computing in a range of contexts, including outdoor play. Early years learning environments should feature computing scenarios based on experience in the real world, such as in role play. Children should gain confidence, control and language skills through opportunities to use the interactive whiteboard or program a remote controlled toy. Recording devices can support children to develop their communication skills, especially for those with English as an additional language.

KS1:

By the end of key stage 1 children should be taught to:

- Understand what algorithms are.
- Write and test simple programs.
- Use logical reasoning to predict and computing the behaviour of simple programs.
- Organise, store, manipulate and retrieve data in a range of formats.
- Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school.

KS2:

By the end of key stage 2 children 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, generate appropriate inputs and predicted outputs to test programs.

- Use logical reasoning to explain how a simple algorithm works 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 can offer for communication and collaboration.
- Describe how internet search engines find and store data. Use search engines effectively, be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely.
- Consider the origin and quality of information and its fitness for purpose.
- Evaluate critically their own and others' use of ICT.
- Recognise the strengths and limitations of ICT and its users eg recognising that a word processor is an effective and efficient tool to help writing, but, on occasion, handwritten text is more appropriate.
- Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.
- Acquire and refine everyday computer techniques eg saving, copying, checking the accuracy of input and output needed to use ICT.

3. Teaching and Learning style

The objective of teaching computing is to equip children with the technological skills to be independent learners; the teaching style we adopt must be kinaesthetic and practical as possible. We teach children discrete computing skills and how to use appropriate hardware or software. Teaching in computing will help individuals or groups of children to use computers to help them progress in all curriculum areas. So, for example, children might research a history topic by using role play software that engages them in a highly visual way, or they might place themselves in a historical setting by manipulating a digital photograph, or they might investigate a particular issue on the internet.

We recognise that all classes have children with a wide range of abilities. This is especially true when some children have access to ICT equipment at home, while others do not. We provide suitable learning opportunities for all children by

matching the challenge of the task to the ability and experience of the child.

We achieve this in a variety of ways:

- Setting tasks which are open ended and can have a variety of responses.
- Setting tasks of increasing difficulty (not all children complete all tasks).
- Grouping children by ability in the room, and setting different tasks for each ability group.
- Providing resources of different complexity that are matched to the ability of the child.
- Using classroom assistants to support the work of individual children or groups of children

4. Planning

As the school develops its resources and expertise to deliver the ICT and computing curriculum, modules will be planned in line with the national curriculum and will allow for clear progression. Modules will be designed to enable pupils to achieve stated objectives.

We carry out the curriculum planning computing in three phases (long term, medium term and short term). The long term plan maps the computing skills that the children study in each term during each key stage. The computing leader devises this in conjunction with the curriculum leader. The children often study computing as part of their work in other subject areas and this is written into the curriculum map. The long term computing plans show how skills are distributed across the year groups; and how these fit together to ensure progression of skills within the curriculum map.

Our medium term plans identify the key learning objectives for each unit of work and the skills within it. The computing subject leader is responsible for reviewing these plans.

The class teacher is responsible for writing short term plans with the computing component of each lesson. These daily plans list the specific learning objectives and expected outcomes for each lesson. The class teacher keeps these individual plans and the computing subject leader scrutinises planning each term.

The computing units are planned to build on prior learning. While we offer opportunities for children of all abilities to develop their skills and knowledge in each unit, we also plan progression into planning so that children are increasingly challenged as they move up through the school. End of year skills overview sheets are collected and collated by the computing leader at the end of the school year.

Parents are asked to sign an Internet Permission form asking that their child's use of the internet is always supervised. A record of those children who do not have permission to use the Internet at school is held by each class teacher and by the school office.

5. The contribution of computing to other curriculum areas

The teaching of computing contributes to teaching and learning in all curriculum areas. It also offers ways of impacting on learning which are not possible with conventional methods. Teachers use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. For example, graphics work links in closely with work in art, and work using databases supports work in mathematics, while role play simulations and the Internet prove very useful for research in humanities subjects. Computing enables children to present information and conclusions in the most appropriate way. Quite a lot of software is generic, and can therefore be used in several curriculum areas.

English

Computing is a major contributor to the teaching of English. Children's reading is supported through talking stories. As the children develop mouse and keyboard skills, they learn how to edit and revise text on a computer they have the opportunity to develop their writing skills by communicating with people via email, and they are able to join in discussions with other children throughout the world through the medium of video conferencing. They also learn how to improve the presentation of their work by using desktop publishing software. There is in addition the use of a variety of

software which also supports the use of reading, writing and listening and speaking skills.

Mathematics

Children use computing in mathematics to collect data, make predictions, analyse results, and present information graphically. Screen robots allow pupils to give exact instructions for a particular route, or to use their knowledge of angles to draw a range of polygons.

Science

Software is used to animate and model scientific concepts, and to allow children to investigate processes which it would be impracticable to do directly in the classroom. Data loggers and iPads are used to assist in the collection of data and in producing tables and graphs.

Personal, social and health education (PSHE) and citizenship

Computing makes a contribution to the teaching of PSHE and citizenship in that children in computing classes learn to work together in a collaborative manner. They also develop a sense of global citizenship by using the Internet and email. The Esafety element of computing enables children to become aware of aspects such as internet safety (for more please see e-safety policy), they quickly learn steps to take to keeping safe while using the Internet.

6. Computing and inclusion

At our school we teach computing to all children, whatever their ability and individual needs. Computing forms part of the school curriculum policy to provide a broad and balanced education to all children. Throughout our computing teaching we provide learning opportunities that enables all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those who are gifted and talented and those who speak English as an additional language, and we take responsible steps to achieve this. For further details see separate policies, Special Educational Needs, Gifted and Talented and English as an Additional Language.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors - classroom organisation, teaching materials, teaching styles, differentiation so that we can take additional or different action to enable children to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against the national expected levels. This ensures that our teaching is matched to the child's needs.

Intervention through the School Action Plus will lead to the creation of a Provision Map or at SA+ an Individual Education Plan (IEP) for children with special educational needs. These may include, as appropriate, specific targets relating to computing. In some instances the use of computing has a considerable impact on the quality of work that children produce, by increasing their confidence and motivation.

We enable children to have access to a full range of activities involved in learning computing. We have a range of software which is designed to include all learners, for example grid clicking and apps on iPads. Our hardware can accept a range of input devices catering to pupils with specific disabilities.

7. Assessment for Learning

Teachers will assess children's work in computing by making formal judgements during lessons. On completion of a piece of work, the teacher assesses the work, and uses this assessment to plan for future learning. Written or verbal feedback is given to the child to help guide his/her progress. Older children are encouraged to make judgements about how they can improve their own work.

The subject leader keeps samples of the children's work in a portfolio. This demonstrates the expected level of achievement in computing for each age group in the school.

8. Resources

Our school has the appropriate number of Interactive Whiteboards, laptops and iPads per class. Each of these has internet access and most software is installed for teachers and pupils to use.

We employ a technician to keep our equipment in good working order. Members of staff report faults in the book provided for that purpose in the staff room. The technician also helps to set up new equipment, and also install software and peripherals. He works two days each week.

In order to keep our school computers virus free, teachers who are transferring files between their home and school must have up to date virus protection software on their home computers. Memory sticks which are used to transfer files from school to home must have password protected encryption installed on them to protect data saved there.

Along with laptops computers the school has the following:

Hardware

- iPads
- Laptops
- Network, including switch, router and server PC
- Network shared resources, including printers
- Interactive whiteboards
- Scanner
- Digital cameras
- Digital microscopes
- Data loggers and sensors
- Video recorders
- Tape-based listening centre calculators
- Floor robot
- Headphone and microphones
- USB drives for portable storage

Software

- Word processing and desktop publishing programmes
- Painting and drawing software
- Various apps

- Music composition package
- Multimedia presentation programme
- Spreadsheet and database programmes
- Virus protection

Online materials

- Online content subscription (education city, clicker)
- School website and intranet
- School email accounts for staff

9. Monitoring and review

The monitoring of the standards of children's work and the quality of teaching in computing is the responsibility of the subject leader. The computing subject leader is also responsible for supporting colleagues in their teaching of computing, for keeping informed about current developments in the subject, and for providing a strategic lead and direction for computing in the school. The subject leader gives the head teacher and governors a termly summary report in which she evaluates the strengths and weaknesses in the subjects, and indicates areas for further improvement in an action plan. The subject leader has specially allocated time for carrying out the vital tasks of reviewing samples of the children's work and of visiting classes to observe the teaching of computing.

Reviewed: September 2016

Signed: Rev. Clare King (Chair of Governors)

Next review - September 2019