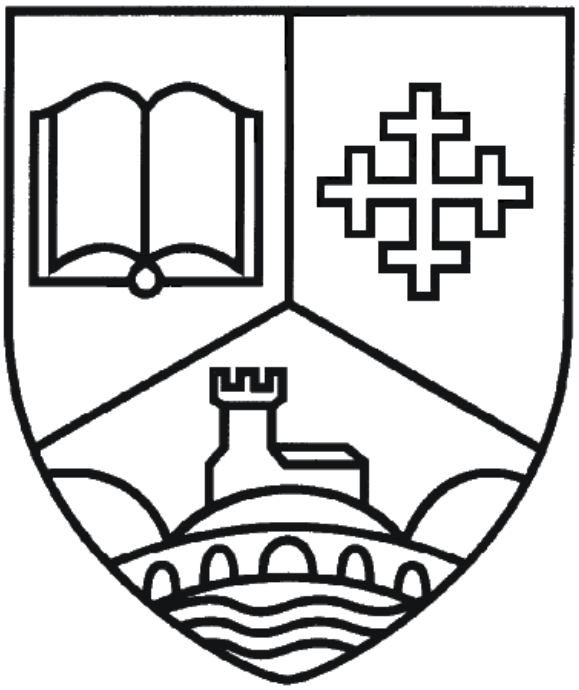
Bidford-on-Avon C.E. Primary School



Policy for Computing

Autumn 2022

Introduction

1. Introduction

This policy outlines the teaching, learning and management of the Computing Curriculum at Bidford-on Avon Church of England Primary School. The school's policy for science is based on the National Curriculum for Key Stages 1 and 2. The policy has been drawn up to reflect our whole school approach to computing and has been discussed with staff and has the agreement of the Governing Body. The implementation of this policy is the responsibility of the Head Teacher and teaching staff.

2. Purpose of study, intent and aims

At Bidford-on-Avon Primary School, our aim is to provide children with the skills and understanding which they can apply to the rapidly changing world of computing. Through our curriculum, we intend to support children to be responsible, competent, confident and creative users of IT and Computer Science technologies. We want to develop computational thinking so children can use technology to solve problems and become active participants in the digital world. Running alongside our curriculum, the Online Safety curriculum, ensures that children are able to develop skills to keep them and others safe online

We deliver a broad range of experiences that satisfy the curiosity and interest children have in Computing; to prepare our pupils for living in a digital world. We aim to provide our pupils with skills in Computer Science, IT, Digital Literacy, alongside a strong foundation in Online Safety, so that they can keep themselves and others safe now and in the future. Children are able to use a range of devices and software packages to broaden their knowledge and hone their skills:

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.

3. Teaching and Learning

At Bidford-on-Avon Primary School, computing is taught both discreetly, with relevant links made to the wider curriculum. Opportunities for learning are also drawn from outside agencies and visits to places of interest. We believe that pupils are best served being taught the best possible content, within discreet curriculum areas. Our curriculum is knowledge-rich and disciplinary/subject-based focussing on the key knowledge, vocabulary and skills. As appropriate contextual links are made across other curriculum subjects to provide meaning and context for learning e.g. computing linked to maths and data management; computing software to develop images in art or manage control systems in D&T; internet research to explore ideas and imagery in the humanities.

Many of the ideas that pupils will encounter within computing are abstract and complex, and need to be illustrated using concrete examples and activities. Bringing these abstract concepts to life with real-world contextualised examples, and connecting them to other subjects, helps pupils assimilate new ideas into their existing understanding. Learning is planned in manageable, connected steps; lessons are coherently and deliberately constructed to include careful scaffolding to ensure that pupils develop secure knowledge and understanding of key concepts and strategies that are built upon in later learning

Teachers use a variety of strategies including first-hand practical experience, exploratory tasks, unplugged activities, modelling, discussion, rich questioning, well -pitched exposition, research, peer collaboration and the development of listening, communication, thinking and problem solving skills. These Quality first teaching approaches linked to the 12 principles of Computing Pedagogy (see appendix) designed by the National Council for Computer education (NCCE) help make abstract concept in computing more concrete. We also teach a progression of Computing vocabulary to support children in their understanding.

At Bidford-on-Avon Primary School our aim is to deliver a Computing curriculum which can be accessed by all pupils. The curriculum should engage and inspire learners whilst conforming to, but not being limited to, the National Curriculum. We recognise the fact that in all classes there are children of different abilities in computing so we aim to

provide suitable and challenging learning opportunities by differentiating tasks, giving additional support to individuals or groups and allowing extensions to computing work through independent research, creativity and problem solving.

4. Curriculum Planning

Computing is a discrete subject within the National Curriculum for both Key Stages 1 and 2.

The Computing curriculum planning is organised in three ways, long term schemes of work, medium term and short term planning. (See curriculum policy). Curriculum maps also outline the whole curriculum studied each year at each phase.

Long term schemes map out the elements of the Computing programme of study studied each year for KS1, LKS2 and UKS2. Schemes identify the relevant computing content, key objectives and key vocabulary studied in each unit of work. Supporting Progression maps (Assessment Milestones) outline the key learning to be attained at the end of KS1; lower KS2 and Upper KS2. Units of work in Computing have been deliberately planned in a progressive way in order to deepen pupils' knowledge and understanding of different areas of technology; this will ensure that all pupils are digitally literate.

Medium and short term planning builds upon their prior learning and long term schemes detailing the aim, content, key vocabulary, key knowledge, resources, assessment milestones, cross-curricular links and cultural capital and series of differentiated lessons taught over each unit of work, relevant to the Key Stage and class. All planning is completed on standardised planning proformas to ensure consistency in content and expectation.

Knowledge organisers outlining the key learning, resources and vocabulary are available to support pupils understanding of the focus of each unit of work.

Our curriculum is based mainly upon Purple Mash units of work which uses 2Simple software, with additional units from Switched on Computing and the Warwickshire IT scheme of work. These commercial schemes provide a comprehensive set of resources aligned to the National Curriculum for Computer science, Technology and Digital Literacy. As part of information technology, children learn to use and express themselves and develop their ideas using technology for example writing and presenting as well as exploring art and design using multimedia. Within digital literacy, children develop practical skills in the safe use of ICT and the ability to apply these skills to solving relevant, worthwhile problems for example understanding safe use of internet, networks and email. In computer science we teach children to understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. Pupils use a range of apps and programs on Chromebooks, laptops and ipads to support their development.

Computer teaching and learning is taught in weekly timetabled slots and supplemented through the use of mobile devices (ipads or Chromebooks) on other occasions.

In each year group pupils are also taught about Online Safety; their responsibilities as internet users and the positive/negative use of other technologies such as mobile phones and gaming. We also teach aspects of this through PSED lessons

Computing is taught mainly in weekly 1 hour lesson slots, with extended sessions where pupils need to develop their products. The timing allocated to teaching Computing each term is outlined in the curriculum policy.

As we have a combination of single and mixed year group classes, planning is done as part of a 2 year rolling programme. This ensures children have complete coverage of the national curriculum and do not have to repeat topics.

A range of computing resources including diagrams and images are displayed around school to provide a stimulus to pupil's curiosity, discussion and engagement in the learning environment.

A stakeholder online safety committee supports online safety and computing learning across the school, organising presentations, displays and supporting the organisation and management of computing equipment.

A range of computing and information technology devices are available including laptops, chrome books, ipads, visualisers, bee-bots and a range of recording/ presentation devices. Pupils use Microsoft Office, Google classroom, Purple Mash and a range of supporting APPS across the curriculum.

<u>Early Years Foundation Stage</u>
Computing within Early years is covered under 'understanding the world'. Children are exposed to computing through a variety of ways. This being the use of technology within the classroom and around them for their day to day learning. Children have access to the use of the class computer, a class Ipad, the use of Bee-Bots and chrome books

towards the end of the reception year. Children have school ambassadors who visit the classroom to talk to them about internet safety. The children learn through stories that the world they live in is digitally rich and ever changing.

Cross-Curricular links.

At Bidford we believe it is important that meaningful links are made with other curriculum subjects. Where appropriate, computing is used to support learning in the Early Years Foundation Stage, Key Stage 1 and Key Stage 2. All subjects have a role in developing Computing skills and skills in the use of information technology support learning across the curriculum. Internet web searches and subject related APPS are now essential in the development of subject knowledge and skills.

Following Covid, pupils are familiar in their use of Google Classroom and staff continue to use this upload specific resources for children to access.

Well Being and SMSC

We provide an education that gives pupils opportunities to explore and develop their values and beliefs, spiritual awareness, high standards of personal behaviour, a positive caring attitude towards other people, an understanding of social and cultural traditions and an appreciation of the diversity and richness of other cultures, including British Values of democracy and equality.

All curriculum areas have a contribution to make to the child's spiritual, moral, social and cultural development and opportunities for this are planned in each area of the curriculum.

Computing allows pupils to explore how developments in technology have changed our culture, particularly the rise in social networking sites and the ability to communicate instantly across National and International borders. They explore the impact of computing on our daily lives and through online safety the moral, social and safety issues that can occur, along with the benefits technology bring communities and social cohesion. Technology supports pupils growing curiosity and wonder about the world around them, through access to a diverse online world of images, knowledge and human interaction, supporting their spiritual development as they explore their place in the world and big questions about the meaning of existence.

Community cohesion and British values

Through our Computer lessons pupils understand how to communicate with others, express their ideas and listen to alternative views. They appreciate how technology links us to local and national communities and can help the development of an open society, supporting British values and Democracy. They appreciate that they need to be reflective in their use of the internet and social media and understand that not all information on the internet is factual, accurate or true.

5. Curriculum Impact

The expected impact of Computing learning and our wider IT provision is that children will:

- Develop key knowledge and skills in the three main areas of the computing curriculum:
  - computer science (programming and understanding how digital systems work)
  - information technology (using computer systems to store, retrieve and send information)
  - digital literacy (evaluating digital content and using technology safely and respectfully).
- Develop as 'responsible, active digital citizens´
- Gain a thorough understanding of e-safety and how to remain safe and respectful online.
- Use and apply Computing knowledge and skills across foundation curriculum subjects.
- Gain an understanding of the importance of Computing and technology in the wider world beyond school
- Use presentation and creative tools and critical thinking, Computing will offer pupils the building blocks that enable them to pursue a wide range of interests and vocations in the next stage of their lives.
- Experience the enjoyment, wonder and pleasure in learning about and through Computing and technology
- Develop the curiosity, creativity, compassion, faith, hope and courage they need to flourish as valued members of the world community, as educated citizens and as part of God's creation
- Meet the end of Key Stage expectations outlined in the National Curriculum for Computing
- Leave primary school equipped with the confidence, creativity and range of techniques to form a strong foundation for their work in KS3 and beyond.

6. Management of Computing within the school

The Computing subject manager is responsible for:

- Compiling, carrying out and evaluating the school geography action plan.

- Maintaining and updating the subject leader folder.
- Coordinating subject assessment and monitoring.
- Auditing and reviewing resources.
- Keeping informed of changes and updates in Computing teaching, for example by attending LA ICTDS meetings and feeding back information to the rest of the staff.
- Supporting the Senior Leadership Team in the monitoring of standards in children's work and of the quality of teaching Computing including policies and schemes.
- Liaising with the school IT technician to ensure that equipment and systems are running efficiently.

7. Health and Safety/ Online safety

In planning activities, including the use of equipment and the internet, social media or applications teachers will risk assess potential safety issues, referring to the relevant policy and documentation. They will also explain the reason for safety measures and discuss any implications with the children. Children will always be encouraged to consider safety for themselves, others and the resources they use, when undertaking Computing activities.

The following considerations are carried out to prevent children from being put to unnecessary risk:

- All equipment is kept in good condition, stored safely and well-organised.
- All electrical equipment is PAT tested and maintained to meet agreed safety standards.
- Class risk assessments ensure all wiring and electrical equipment is deployed safely.
- Old computer equipment is cleared of data in line with Warwickshire County Council's environmental disposal policy and the school's data protection policy
- The school meets the required online safety technical requirements as identified by the local authority.
- The school publishes an annual Online safety policy outlining its commitment to safeguard members of our school community online in accordance with statutory guidance and best practice
- Bidford School subscribes to the Warwickshire ICTDS Safeguarding & Monitoring Service
- Pupils sign an Acceptable Use Agreement outlining their responsibilities when using the internet and school equipment.
- Schemes of work in Computing and PSHCE address key issues for pupils regarding online safety.
- Online safety rules are displayed in classrooms.
- The Online Safety Group monitors online safety and pupil representatives provide regular online presentations to pupils.
- A planned programme of formal online safety and data protection training is available to all staff.
- Pupils only use recommended search engines.

All trips/visits must be risk assessed and an EVOLVE risk assessment form completed and signed by the Educational Visits Coordinator (EVC). Follow guidance in the Educational visit policy regarding arrangements for all trips.

- Online Safety is embedded within the curriculum ensuring that all pupils are able to develop a progression of skills across the Key Stages to keep them safe online.
- Opportunities for learning about Online Safety are part of the computing curriculum and reinforced whenever technology is used.
- Clear rules for Online Safety are agreed by each class at the beginning of every year. Parents and pupils sign an acceptable user policy together when a pupil first starts at the school. The class rules are then signed annually by pupils and shared with parents.
- The school supports the international Safer Internet Day each February and provides opportunities for pupils to consider cyberbullying as part of Anti-Bullying week in the autumn term.
- Opportunities are taken whenever possible to reinforce messages of Online Safety; each year pupils are appointed to the Online Safety group. Their role is to promote Online Safety by educating and supporting their peers.
- The school has an Online Safety policy in place that details how the principles of Online Safety will be promoted and monitored.
- Staff receive training in the link between radicalisation and internet use.

8. Safeguarding

All activities in Computing will be managed within the guidelines stated in the school Safeguarding and Online policy. All additional adults/volunteers supporting Computing activities must be informed of their safeguarding duties and checked with the office/safeguarding leads for their suitability before being asked.

The use of digital devices and the internet by staff and pupils will be managed within the guidelines stated in the online safety policy.

9. Assessment and Recording

- Formative assessment is used by the class teacher and teaching assistant during whole class or group teaching. Assessment for learning strategies are employed to enable teachers to identify the strength of understanding of children. Teachers use this information to make adaptations to their planning to meet the needs of the children.
- Open questions are used to challenge children's thinking and learning.
- Children are encouraged to evaluate their own and others' work in a positive and supportive environment, including peer assessment.
- Teacher's judgments are supported through an electronic portfolio of evidence which provides examples of age-expected attainment.
- When a unit involves 2Simple software, teachers are able to access their pupil's work through Purple Mash.
- Any work, using a Google app, is also accessible to teachers.
- Information is shared with the school community through the school website, display, celebration events, newsletters, and end of year reports.
- At the end of each unit of work the teacher makes a judgement about the skills and performance of each pupil if they have yet to attain, met or exceeded the unit objectives linked to the national curriculum – a conglomeration of this data is used to assess pupil's attainment at the end of this year. Key Stage teams complete a termly subject review, which support improvement in planning and resources of subjects and the subject leader completes an annual subject action plan/review and end of year subject report to support the monitoring of standards in the subject.

10. Resources

- The school has a range of resources to support the delivery of the Computing curriculum, the Early Years Framework and learning across all areas of the National curriculum.
- All computers, chrome books and ipads are kept in locked storage units and secure rooms.
- Additional Computing resources are kept in cupboards in the Hub.
- The Computing subject leader keeps up to date with new technologies and reviews the school's provision, as well as maintaining the existing resources in partnership with the school's technology support provider.
- Hardware and software faults are identified and reported to the Subject Leader. Problems/faults are prioritised and the visiting technician is informed.
- The Computing Action Plan expresses the school's priorities for future expenditure and is reviewed by the Computing subject leader, governors and senior management who consider its impact on all learning.
- Governors and senior management ensure that they achieve value for money by implementing the principles of best value in evaluating, planning, procuring and using technology.
- Old resources are disposed of in line with Warwickshire County Council's environmental disposal policy and the school's data protection policy where these are applicable.

11. Monitoring and review

The impact of the Computing curriculum is monitored regularly by the Computing subject leader through pupil discussion, samples of work and discussion with teachers, an electronic portfolio and the use of the NAACE Self Review Framework. Systematic monitoring of all threads of Computing informs the subject leader and school development plan.

The Computing leader conducts regular audits of the training needs of teachers and teaching assistants to improve their subject knowledge and confidence. Requests for training in Computing can be part of individual teacher's performance management plan.

Monitoring of the standards of the children's work and of the quality of teaching of Computing is undertaken to ensure that pupils make the best possible progress. The annual Computing action plan outlines yearly subject improvement tasks and reviews the previous year's actions. Subject leaders conduct termly/ yearly monitoring activities looking at standards, planning and pupil experience. Governors meet periodically with subject leads to review the intent, implementation and impact of their work.

How we teach computing

12 pedagogy principles

Lead with concepts

Support pupils in the acquisition of knowledge, through the use of key concepts, terms, and vocabulary, providing opportunities to build a shared and consistent understanding. Glossaries, concept maps, and displays, along with regular recall and revision, can support this approach.

Unplug, unpack, repack

Teach new concepts by first unpacking complex terms and ideas, exploring these ideas in unplugged and familiar contexts, then repacking this new understanding into the original concept. This approach (semantic waves) can help pupils develop a secure understanding of complex concepts.

Create projects

Use project-based learning activities to provide pupils with the opportunity to apply and consolidate their knowledge and understanding. Design is an important, often overlooked aspect of computing. Pupils can consider how to develop an artefact for a particular user or function, and evaluate it against a set of criteria.

Challenge misconceptions

Use formative questioning to uncover misconceptions and adapt teaching to address them as they occur. Awareness of common misconceptions alongside discussion, concept mapping, peer instruction, or simple quizzes can help identify areas of confusion.

Structure lessons

Use supportive frameworks when planning lessons, such as PRIMM (Predict, Run, Investigate, Modify, Make) and Use-Modify-Create. These frameworks are based on research and ensure that differentiation can be built in at various stages of the lesson.

Work together

Encourage collaboration, specifically using pair programming and peer instruction, and also structured group tasks. Working together stimulates classroom dialogue, articulation of concepts, and development of shared understanding.

Model everything

Model processes or practices — everything from debugging code to binary number conversions — using techniques such as worked examples and live coding. Modelling is particularly beneficial to novices, providing scaffolding that can be gradually taken away.

Add variety

Provide activities with different levels of direction, scaffolding, and support that promote active learning, ranging from highly structured to more exploratory tasks. Adapting your instruction to suit different objectives will help keep all pupils engaged and encourage greater independence.

Make concrete

Bring abstract concepts to life with real-world, contextual examples and a focus on interdependencies with other curriculum subjects. This can be achieved through the use of unplugged activities, proposing analogies, storytelling around concepts, and finding examples of the concepts in pupils' lives.

Read and explore code first

When teaching programming, focus first on code 'reading' activities, before code writing. With both block-based and text-based programming, encourage pupils to review and interpret blocks of code. Research has shown that being able to read, trace, and explain code augments pupils' ability to write code.

Get hands-on

Use physical computing and making activities that offer tactile and sensory experiences to enhance learning. Combining electronics and programming with arts and crafts (especially through exploratory projects) provides pupils with a creative, engaging context to explore and apply computing concepts.

Foster program comprehension

Use a variety of activities to consolidate knowledge and understanding of the function and structure of programs, including debugging, tracing, and Parson's Problems. Regular comprehension activities will help secure understanding and build connections with new knowledge.

Find out more about our principles and add some or all to your personal pedagogy toolkit.

ncce.io/pedagogy