Computing Curriculum Policy

Introduction

'A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world.'

Computing programme of Study, DfE, 2013

Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems… 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. At St. Aidan's RC Primary, we believe that Computing is an integral part of preparing children to live in a world where technology is continuously and rapidly evolving, so much so that children are being prepared to work with technology that doesn't even exist yet. For this reason, we feel that it is important that children are able to participate in the creation of these new tools to fully grasp the relevance of and the possibilities of emerging technologies thus preparing them for the world of work.

This policy provides an overview to the new Computing Curriculum and a programme of study across the Key Stages. It should also serve as a glossary of terms allowing a clear understanding.

This policy links in with:

- Online safety policy
- PSHE and RSE policy
- Mobile Devices Policy
- Remote Learning Policy

Aims

- To enable children to become autonomous, independent users of computing, gaining confidence and enjoyment from their activities
- To develop a whole school approach to computing ensuring continuity and progression in all strands of the computing National Curriculum
- To use computing as a tool to support teaching, learning and management across all areas of the curriculum
- To provide children with opportunities to develop their computing capabilities in all areas specified by the Curriculum.
- To ensure ICT is used, when appropriate, to improve access to learning for pupils with a diverse range of individual needs, including those with SEN and disabilities
- To maximise the use of computing in developing and maintaining links between other schools, the local community including parents and other agencies

Curriculum Development and Organisation.

By following the National Curriculum 2014 for Computing we aim for all 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.**

The planning and teaching of Computing

We always aim to incorporate as much as we can of the computing curriculum into our termly topics, however where this is not possible lessons will follow an alternative scheme of work (Twinkl-Planit). Adaptations are made to ensure the plan is progressive in developing pupil capability.

The core requirements of KS1 and KS2 computing programmes of study, such as coding/programming, will be delivered through our own schemes of work which have been adapted from a range of sources, during lessons based in our ICT suite. Each class is allocated a time in the ICT suite to help aid follow this scheme of work. Each class is also allocated additional time to apply the use of computing to other subject areas.

Equal Opportunities, Inclusion, Special Educational Needs and Disabilities (SEND)

It is our policy to ensure that all children, should have the opportunity to develop computing and ICT capability. We aim to respond to children needs and overcome potential barriers for individuals and groups of children by:

- Ensuring that all children follow the scheme of learning for Computing.
- Providing curriculum materials and programmes, which are in no way class, gender or racially prejudice or biased.
- Providing opportunities for our children who do not have access at home to use the school computers/Internet to develop independent learning.
- Providing suitable challenges for more-able children, as well as support for those who have emerging needs.
- Responding to the diversity of children's social, cultural and ethnographical backgrounds.
- Overcoming barriers to learning through the use of assessment and additional support.

Teaching & Learning

Teacher's planning is differentiated to meet the range of needs in any class including those children who may need extra support, those who are in line with average expectations and those working above average expectations for children of their age.

A wide range of styles are employed to ensure all children are sufficiently challenged:

- Children may be required to work individually, in pairs or in small groups according to the nature or activity of the task.
- Different pace of working.
- Different groupings of children - groupings may be based on ability either same ability or mixed ability.
- Different levels of input and support.
- Different outcomes expected

The subject lead will review teachers' computing plans to ensure a range of teaching styles are employed to cater for all needs and promote the successful development of computing.

Internet Safety (E-Safety)

See separate policy.

Assessment

Computing is assessed both formatively and summatively. Formative assessment occurs on a lesson by lesson basis based on the lesson objectives and outcomes in the scheme of work. These are conducted informally by the class teacher and are used to inform future planning. A record of each lesson is created in the classbook which should evidence 2/3 members of a class' work and answers to any questions asked in the lesson.

Activities are planned at throughout the unit of work to enable summative assessments to take place where children's ICT capability is assessed. This work is to be stored in physical form or electronic form. Electronic evidence will be stored in each class's folder on google classroom.

Roles and responsibilities

Senior Management:

The overall responsibility for the use of ICT rests with the senior management of a school. The Head, in consultation with staff:

- determines the ways computing should support, enrich and extend the curriculum; decides the provision and allocation of resources;
- decides ways in which developments can be assessed, and records maintained;
- ensures that ICT is used in a way to achieve the aims and objectives of the school; ensures that there is a computing policy, and identifies a computing co-ordinator.
- Management of remote learning platforms

The computing subject leader will:

- Provide support, advice and resources to members of staff;
- Monitor the teaching of Computing, revising policies and supporting staff with planning of computing where necessary;
- Monitor the teaching of computing across the school highlighting the continuity and progression of the areas taught across the school;
- Attend relevant training and support staff in CPD needs.
- Monitor the use and need of resources throughout the school.
- Keep up-to-date with new developments in computing and communicate such information and developments to colleagues.

Teachers will:

- Plan and deliver the requirements of the KS1 and KS2 computing programmes of study to the best of their abilities.
- Set high expectations for all their pupils, including pupils with special educational needs and/or disabilities.
- Encourage pupils to apply their knowledge, skills and understanding of computers and iCT across the curriculum.
- Maintain up-to-date assessment records.

Monitoring

Computing is monitored by the subject lead and monitoring is carried out regularly through:

- Scrutiny of plans

- Monitoring of pupils' books
- Learning walks
- Pupil surveys
- Lesson observations

Curriculum

EYFS
Although computing is not a statutory part of the EYFS, we will ensure that children of nursery and reception age receive a broad, play-based experience of computing through the use of technical resources including: technical toys, bee bots and Ipads and other classroom resources such as shapes and construction. Children will be introduced to the basic key learning skills that will be taught in KS1, through continuous provision and adult led activities, such as: creating patterns, following and creating instructions, predicting what will happen, using technology purposefully and safely and they will be introduced to technology in play.

Key Stage 1
By the end of Key Stage 1 children should be able to:

- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
    - *Think of a cup tea, what steps need to be taken to make it? What decisions have to be made? Do you want milk? Do you want sugar?*
    - *Program a Bee-Bot through a maze, right down the instructions first, plan the instructions.*
    - *Program a Pro-Bot to travel to a specific point. What instructions do you need to include in order for it to get there? Links to maths, measuring, angles, turns.*
- Create and debug simple programs
    - *Why does my cup of tea not taste right? Is it too sweet, too milky?*
    - *Bee-Bot and Pro-Bot, where has it gone wrong, where does it need to change?*
    - *Flowol 4. Why are the lights not working?*
- Use logical reasoning to predict the behaviour of simple programs
    - *If I put in two spoons of sugar will I like my cup of tea?*
    - *If I put in these instructions where will the Bee-Bot/Pro-Bot end up?*
    - *Scratch. Where will the cat end up?*
    - *Logic. Moving the turtle?*
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
    - *Create a folder and save work*
- Use technology safely and respectfully, keeping personal information private; know where to go for help and support when they have concerns about material on the internet
    - *CEOP*
    - *Hector the Protector*
- Recognise common uses of information technology beyond school
    - *Learning Platform*
    - *Create a poster on publisher for all the technology they use at home*

Key Stage 2
By the end of Key Stage 1 children should be able to:

- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
    - *What steps are required to make a cup of tea?*

- *Probots, around the rally track or to check points around the fairground.*
- *Trip to a centre that uses controls*

- Use sequence, selection and repetition in programs; work with variables and various forms of input and output
  - *Probots, repetition to draw shapes*
  - *Flowol, using mimics such as the greenhouse – when the temperature reaches a set point the water needs to come on, when the light drops below a set reading the lights need to come on.*
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
  - *Draw out the algorithms (processes) for making a cup of tea, the tea is too sweet because the decision to add sugar wasn't given a chance to follow on so it kept on adding.*
- Understand computer networks including the internet; how they provide multiple services, such as the world-wide web; and the opportunities they offer for communication and collaboration
  - *Using the learning platform to chat to peers and to communicate on joint projects together.*
  - *Skype on the tablets, video links between the classes on a shared learning day.*
  - *Use the learning platform to save work to, retrieving it and editing it in a variety of locations e.g. home and school.*
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
  - *Using advanced searches*
  - *Google is not the internet it is simply a search engine and there are others (Bing has a simple list of short cuts for advanced searches)*
- Use technology safely, respectfully and responsibly; know a range of ways to report concerns and inappropriate behaviour
  - *CEOP training*
  - *Hector the Protector*
- 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
  - *Minibeast search – photograph the minibeast, upload to a computer. Another child views the uploaded images and creates a spreadsheet of what has been found. This has been analysed*
  - *Tablets to find facts*
  - *Internet to retrieve images*
  - *Cameras to create a digital image*

Effective and efficient deployment of ICT resources

ICT resources are deployed throughout the school to maximise access, to enhance teaching & learning and to raise attainment. To enable regular and whole class teaching of computing the school has an ICT suite which all classes in EYFS, KS1 & KS2 use for approximately 1 hour per week to develop their ICT skills. Children also have access to iPads and laptops which are available for staff to book out. All classrooms have interactive whiteboards available at all times. A consistent interface is provided on all machines to enable familiarity and continuity with generic 'toolkit' software licensed and available on all curriculum computers in school. School360 and Google Classroom are used for remote learning as well as storage and access to shared files.

Online resources for home use

In recent years there has been a boom in the education opportunities that are available online.
We have bought into the following to give pupils safe access to online education opportunities outside of school. These are:

- Times Tables Rockstars
- School360
- Education City

Pupils have passwords that can be used to access these sites. Pupils have been shown how to use them and how to keep their passwords safe from others.

Training

All staff, including managerial and administrative staff, receives support from SMT, subject leader or technicians and, where necessary, external training in hardware or software which they are expected to use to carry out their role

Security

- The ICT and computing technician will be responsible for regularly updating anti-virus software.
- Use of ICT and computing will be in line with the school's Acceptable Use Policy'. (All staff, volunteers and children must sign a copy of the schools AUP.)
- Parents will be made aware of the 'Acceptable Use Policy'.