Computing Curriculum Implementation

Statement of intent

Within Computing, we ensure that all children access the learning of skills appropriate to their age. Through Computing we equip them to be effective, safe and responsible citizens of the 21st century. We endeavour to ensure that skills are progressive and developmental. Effective links are made where appropriate to support previous or future learning, and preparing them for the use of technology beyond education. Pupils will have opportunities to consolidate and refine their skills throughout the curriculum.

Schemes of work

Development Matters
Bespoke Long Term Planning covering the National Curriculum 2014 and all strands of Computing.
Weaving knowledge, skills and understanding into the National Curriculum- Focus Education

Curriculum content

The Computing Curriculum can be divided into three inter-related strands:

- Computer Science
- Information Technology
- Digital Literacy

Computer Science:
Pupils need to understand what algorithms are – this is the basis of what they need to know in order to write computer programs. Each programming language has its own vocabulary and grammar but they all follow the same type of logic. It is possible and beneficial to learn computer science away from computers or other digital devices. Role play and kinaesthetic activities help pupils develop logical reasoning.

Pupils need to be able to write algorithms and programs. They also need to be able to find mistakes (bugs) and fix them. When children write programs they will learn that there are often different ways of getting the right outcome, and they need to be able to evaluate the programs to decide which is the most efficient.

While children will make mistakes in their own programs it is often easier to find mistakes in code that has been produced by other people. Providing pupils with example programs give them the opportunity to predict what they will do and identify any bugs. Working collaboratively is also an effective method. As pupils get older the programs they write will become more complicated. They will need to use sequence, selection, repetition and variables in their programs.

The computer science strand also requires knowledge of networks and how searches are performed.

Information Technology:
Most of this strand can be covered by using technology to support other subject areas though it may be necessary to teach some discrete skills. Students should understand that technology is everywhere, be able to identify the technology they encounter and have a basic understanding of how it works. This will link to work on programming and algorithms.

Appropriate activities include word processing, creating images, taking and using photographs and video, creating music and animations, using and creating databases, producing websites and contributing to blogs. As well as creation of digital materials pupils should have experience of

manipulating and editing their own work and resources from elsewhere. They need to know how to use the tools available but also to have an element of digital literacy – awareness of audience and good design principles. Pupils should experience a range of different applications and software, initially the teacher will select the programs they use but over time pupils should be encouraged to make decisions themselves.

Pupils also need to know how to store and organise their files so that it can easily be found again. They need an understanding of the devices they can use including: hard drive, USB sticks, school network server, and the cloud storage on the internet.

Digital Literacy:
Children need to be able to use technology safely. They need to keep their personal information private and treat other people with respect. If something goes wrong or they see something they don't like they should know what to do and where to go for help. As children get older they need to know about how to use technology responsibly. As well as thinking about how their online behaviour affects others they need to be aware of legal and ethical responsibilities, including respecting copyright and intellectual property rights, keeping passwords and personal data secure and observing terms and conditions for online services. They need to understand the main risks relating to:

Content – being exposed to illegal, inappropriate or harmful material
Contact – being subjected to harmful online interaction with other users
Conduct – online behaviour that increases the likelihood of, or causes, harm

Children should understand an age appropriate version of the school's Acceptable Use Policy. E-Safeguarding should link with the school's general child protection policy and should not be seen as a separate issue.

Here at Barkisland, we have written our own Computing Scheme, reflecting the needs of our children and ensuring the content of our 2 Curriculums are met: Development Matters and The National Curriuclum. Below are the requirments.

EYFS- The World: Technology

22-36 months
•Children seek to acquire basic skills in turning on and operating some ICT equipment. •Children operate mechanical toys, e.g. turns the knob on a wind-up toy or pulls back on a friction car

30-50 months
•Children know how to operate simple equipment, e.g. turn on CD player and using remote control. •They show an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones. •Children show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. •They know that information can be retrieved from computers

40-60 months
•Children can complete a simple program on a computer. •They use ICT hardware to interact with age-appropriate computer software.

Early Learning Goal

Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

Computing KS1

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.

Computing KS2-

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.

Record of pupils work

Pupils have their own individual folders as well as class folders to store any work they have done. This tends to be mainly work that has been word-processed/published.
Teachers record work via pictures and these are printed off to put in children's books e.g.topic books, English books etc depending on the links.
Our Twitter feed also demonstrates our wide use of Technology from EYFS to Year 6.
Learning Book (EYFS)

Assessment

Class teachers will use formative assessment information throughout the unit to adapt their teaching foci to meet the ever changing needs of their class. As a school, we assess children at the end of each unit of learning. Assessment is based upon the objectives taught and children are assessed at emerging, expected or exceeding using Focus Education's Weaving knowledge, skills and understanding into the National Curriculum.

EYFS use formative ongoing assessments through observations surrounding the elements of Development Matters. Teachers record these observations on an electronic Learning Journey and parents are encouraged to contribute also.

Cross curricular

Computing is rarely taught in isolation, although each class has a lesson designated to the teaching of the contents of the computing curriculum and covers the 3 strands.

At the start of every year, the children are expected to sign an acceptable user agreement from EYFS to Year 6. This ensures that right from the time children enter school, they are beginning to have an understanding of how to keep themselves safe online, build resilience if things go wrong, develop interpersonal skills by treating others with respect online and how to respect property. All classrooms have an Esafety poster displayed in their classroom to make reference to throughout the year.

Each year we run a safety week which incorporates educating the children surrounding Esafety. This aims to build upon the children's learning surrounding keeping safe online, the effects of prolonged screen time, promoting problem solving and building resilience around issues that may crop up online, developing interpersonal skills such as emotional intelligence particularly in relation to communicating with others.

Esafety is threaded through lessons throughout the year and is also addressed on a needs basis. For example, stressing the need to use technology appropriately, how to conduct safe and reliable searches and how to report inappropriate content.

Digital Literacy and Information Technology are taught frequently throughout other subjects. Children have frequent opportunities to use Ipads and laptops to research information linked to topics and use programmes such as Word, Publisher and Powerpoint to publish and present work.

Other such ways children have covered the digital literacy and information technology strands of the Computing Curriculum:

Media is used to inspire and educate our children right across the school. For example, in Year 6, children have learnt about other Faiths through videos and had virtual tours around Synagogues and Mosques. This enables the children to experience how diverse our world is, building that respect for others whoh0 are different to us and creating an inclusive attitude.

During our Science week, teachers used media to show experiments and news linked to animal conservation.

Videos are often used in Literacy to inspire children to write creatively. In Year 5, children watched documentaries on Walter Tull, not only to support their writing but to also support Black History Month. Children in Key Stage One use videos to help with the sequencing of traditional tales.

Year 4 wrote their own blogs after researching and being inspired by what other people blog about.

Children in Year 6 used Imovie to record a story in groups before publishing it. Activities such as this contribute towards their interpersonal skills where the children need to negotiate, make decisions and communicate verbally and non-verbally.

Year 5 have produced documentaries linked to Science on Imovie supporting our intent surrounding

building critical thinkers and inspiring curiosity.

Year 2 produced a jam sandwich Powerpoint helping them to become successful and develop a sense of pride in a final outcome they have been working towards.

Children across the year groups use Apps and online programmes to support and challenge their learning, enable them to make progress and become successful in other subjects. Key Stage Two use Timestable Rockstars to compete with others to better their recall of timestables; Bug Club, an online reading programme, supports the children with their phonics and comprehension; phonic Apps are used to enhance our phonics provision and support children who need extra help; Mathsframe, an online Maths programme, is used to consolidate and extend children's learning surrounding the different areas of the Maths curriculum.

Across the year groups, children learn how to produce graphs in Maths and Science, collecting data and subsequently presenting it.

Year 3 have used branching trees to sort and organise information.

The Computer Science strand of the Computing Curriculum gives the children the chance to problem solve, make decisions, persevere when things go wrong, think creatively , achieve a set goal and challenge themselves.

For example:

Children in EYFS have programmed Beebots to make a journey through a story in the correct order, solving issues along the way if the Beebot doesn't go in the directions planned.
Beetbots have been used in Key Stage One to teach position and direction linked to Maths.
Year One children have used an App called Daisy the Dinosaur to demonstrate their understanding of how to programme a virtual toy to follow given instructions.

Sequencing and following instructions are taught through other areas of the curriculum such as story sequencing and writing instructions in English, lifecycles in Science and timelines in History.

Enrichment

Each year we run a safety week which incorporates Esafety day.
Children have the opportunity to use the ipads and laptops in all our enrichment opportunities across the course of the year e.g. research during Science Week.

Home school links

Bug Club is an online reading programme the school have invested in. The children are allocated books by the teacher and the children can access these at home.
Timestable Rockstars is an online Maths programme, focusing on the recall of timestables. Key Stage Two Children have their own login which enables them to play at home.
It is an expectation in the EYFS that parents contribute to their children's learning and assessment. Parents are encouraged to upload any learning to the online Learning Journey or discuss their child's achievements etc with the EYFS staff.
We have an Esafety page on web sharing a wealth of information with parents/carers on how to keep their children safe online at home.
As a school, we are extremely proactive in relation to Esafety and work well with our parents. Our parents know that they can come to us with any Esafety issue and we will endeavour to support them where possible e.g. information surrounding use of Apps at home, children accessing inappropriate content at home and issues surrounding online bullying etc.

We have policies in place to protect children surrounding Esafety and this extends to home. Esafeguarding is part of our Safeguarding at Barkisland. Parents have copies of these policies at the beginning of every year and there is also a copy online.
Our website sets out our Computing Curriculum, and termly class newsletters give parents more detail about what their child will be covering.