Computing Curriculum

Rationale

Computing equips pupils to use computational thinking and creativity to understand and change the world. The computing curriculum was carefully selected to provide the children of Collierley Primary and Nursery School to take part and develop in our rapidly changing world. Our curriculum allows children to find, explore, analyse, exchange and present information using a range of technology. We focus on developing the skills to enable children to discriminate and effectively use information. The computing skills which are developed through our computing curriculum, ensure pupils to become digitally literate. When a pupil leaves Collierley Primary and Nursery School, they have the foundations to become an active participant in the digital world.

Aims and objectives

The aims of computing are to enable children:

- To develop skills in finding, selecting and using information;
- To use a range of different electronic devices effectively and appropriately;
- To monitor and group events both real and imaginary;
- To apply their digital literacy skills across the wider curriculum;
- To become responsible, competent, confident and creative users of information and communication technology;
- To evaluate and analytically solve problems using new or unfamiliar technologies;
- To use computational terms to analyse and write computer programs in a practical manner.

Teaching and learning style

Equipping the children with the skills necessary to independently use technology is the teaching style we adopt by being as active and practical as possible. We encourage children to use hardware and software in our discrete computing lessons however we build on our digital literacy skills across the curriculum. So, for example, our Year 6 children program a micro:bit following the algorithm to produce a pedometer; the children measure their hourly step count to then upload onto a database to compare results. We also encourage the children to explore the way of improving or changing their digital results by editing documents or presentations using Google applications. From Year 2, the children will learn how to edit pictures to digitally change the appearance of a natural objects; this learning will be continuously developed yearly to build up the skills to create a group video in

Year 5. This is an example of how we prepare our children to develop skills to participate in the rapidly-changing technological world we live in.

At Collierley Primary and Nursery School all classes have children with differing computing abilities. This is especially true when some children have access to computing equipment at home, while others do not. Our computing curriculum provides suitable and challenging learning opportunities for all children to match their ability and experience. We achieve this by:

- Setting open-ended tasks so the children can take it to their own learning level;
- Having a range of different challenges with increasing difficulty (shows which children are achieving at a higher level);
- Having mixed ability groups so the children can share their experiences;
- Providing different resources of different complexity (e.g. BeeBots to EV3 robots and Micro:bits);
- Using TAs to support children with SEN.

Computing Curriculum Planning

At Collierley Primary and Nursery School, we use the National Curriculum for Computing as a basis for planning. We have adapted 'Teach Computing' scheme to support the needs of our children to ensure their learning is challenging and practical.

We carry out our computing planning in three phases (long, medium and short term). The long-term plan maps the computing topics that the children study in each term during each key stage. Our long-term computing plan shows how teaching units are distributed across the year groups, and how these fit together to ensure progression within the curriculum plan.

Our medium-term plans, which we have adopted from the national curriculum, give details of each unit of work for each term. They identify the key learning objectives for each unit of work and stipulate the curriculum time that we devote to it. The computing subject leader is responsible for keeping and reviewing these plans.

The class teacher is responsible for writing the short-term plans with the computing component of each lesson. These lesson plans list the specific learning objectives of each session. The class teacher keeps these individual plans to help assess the children's learning in each session. The assessment of each lesson will be recorded by the children in their 'class floor book' to show what the children have learnt and how this can be developed in the upcoming lessons.

The 'Teach Computing' scheme has been adapted to support our children's practical experiences. We use Google Classroom as our main digital platform so the lessons have been emended to enable all software to be compatible. Our children at Collierley Primary and Nursery School enjoy practical learning so this is heavily planned into each termly topic. Moving forward in today's society, the children's learning is relevant to the digital world for example; editing pictures, creating websites and coding. Throughout KS1 and KS2 we teach 4 units per year which covers all aspects of the curriculum. Every lesson is purposeful and builds upon prior learning. Majority of the topics have been taken from 'Teach Computing' to develop their skills and knowledge across each unit to build upon planned progression. This provides our children with increasing challenge in the computing curriculum throughout our Primary School.

Online safety is taught through two computing lessons every term to reiterate the importance of keeping safe while online. Online safety is also covered in our PSHCE lessons. Our online safety topics progress throughout the years to provide challenge and age appropriate encounters. Things that are covered in online safety sessions include;

- Setting SMART rules;
- Digital footprint;
- Cyberbullying;
- Viruses;
- Being a good digital citizen;
- Preventing and dealing with spam;
- Stereotypes.

Google Classroom

As a school, we used Google Classroom as our learning platform during remote learning. Google Classroom is a web-based learning environment. When logged into Google Classroom, students can collaborate with their peers and teachers. Google Classroom offers a digital safe space for students to view class tasks, access learning materials, view posted assignments, and turn in completed work.

All classes in KS1 and KS2 are linked to a Google Classroom account and all children have access to their classroom. Where appropriate, Google Classroom should be used as the portal through which children can access individual computing lessons and submit evidence of the work they have produced. Where children might be required to document their learning or conduct research, this can be evidenced using Google docs, slides or sheets and then saved directly to their Google Classroom account.

Computing in the Early Years

In Early Years children have access to a variety of technology devices such as Beebots, iPads, computers and more. Although computing is not taught as a separate lesson, there is an area of learning that is focused on Technology in 'Understanding the World. This area encourages children to understand and interact with technological devices in a real life setting and allows children to understand the uses of technology within their own lives. During the year they gain confidence and start using the computers to find information and use it to communicate in a variety of ways.

Equal opportunities

As a school, we endeavour to maintain an awareness of and to provide for equal opportunities for all of our pupils. We aim to take into account cultural background, gender, talents and special educational needs.

Collierley Primary and Nursery School aspire to fully include SEN pupils in computing sessions. There is much evidence to suggest that computing is a way of enhancing the curriculum for children with a special educational need, especially in terms of fine motor control, co-ordination and sensory immersion. As with any pupil, staff will ensure that a child with special educational needs can experience success, achievement and satisfaction. Teachers will consider:

- Differentiation and support to meet the need of the pupil;
- Adapt tools or equipment;
- Individual Education Plans (if these refer to development of co-ordination, motor skills or other specific needs);
- Method of recording (members of staff may need to support with recording of learning or task)
- Use of assistive technology

We enable pupils to have access to the full range of learning opportunities involved in learning computing. Where children are to participate in activities outside the classroom, for example, a visit to a Lego Mindstorms EV3 robot conference, we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

Assessment and recording

Assessment is a continuous process. Teachers assess children's work in computing by making informal judgements as they observe them during lessons. On completion of a lesson, the children will record what they have done and what they have learnt. This provides clear evidence of which children achieved and which children need more support on the upcoming lesson. The teacher will take note of which children requires extra assistance in the future lessons.

At the end of a unit of learning, the class teacher makes a summary judgement about the learning of each pupil in relation to the national curriculum sub levels of attainment and records these attainment levels on the upcoming terms MTP.
The data is added to and tracked on Insight, our whole school tracking system. We use this as the basis for assessing the progress of the children and to pass information on to the next teacher at the end of the year. The children's work is saved on Google Classroom so staff are able to mark and assess continuously.

Resources

At Collierley Primary School we access a lot of resources to support our Computing learning and development. Our lessons are progressively planned so each child is given the opportunity to develop the skills in which they have acquired in through the previous academic year.

Our school acknowledges the need to continually maintain, update and develop its resources and to make progress towards a consistent, compatible system that incorporates a range of technologies by investing in resources that will effectively deliver the strands of the national curriculum and support the use of ICT and computing across the school. Teachers are required to inform the technician of any faults as soon as they are noticed via an online log book. Resources, if not classroom based, are located in the computer areas or stored away by the technician. A service level agreement is currently in place to help support the technician to fulfil his role both in hardware & audio visual.

We two class sets of chromebooks and selection of iPads as our portable devices and twenty computers situated in our computer suite. Computers around the school are networked and have Internet access. We keep resources for ICT and computing, including software, in a central store. Interactive Whiteboards are available for all children to access daily. The computing suite is available for use throughout the school day which can be used as part of computing lessons as well as for cross-curricular use. During our computing lessons, the children also have access to:

- Variety of cameras (digital and instant)
- BeeBot
- Torches
- Websites such as (Pixlr – photo editing, Page Extension Rank – internet research)
- EV3 robots
- Google Classroom
- Micro:bits

The resources are carefully planned out through our detailed medium term plans to allow teachers and other staff members to use appropriate resources to move learning forward.

Responsibilities

Class teachers are responsible for:

- Differentiating and adapting lessons to cater for all ability levels, ensuring SEND (Special Educational Needs and Disability), GDS (Greater Depth) and EAL (English as an Additional Language) are suitably challenged to meet their needs;
- Incorporating IT, where appropriate, when planning classroom activities;
- Understanding and utilising the range of software available in school and its use in relation to cross curricular activities;
- Recognising and dealing with common faults and mistakes that can arise when using computing hardware and software;
- Maintaining own knowledge and skills of computing in accordance with educational developments;
- Ensuring children are responsible, respectful and safe when using IT;
- Reporting problems or faults to computing technician.
- Ensuring that all devices are stored and charged appropriately and teaching children about the importance of this.

The Computing Coordinator (M.Young) is responsible for:

- Assisting Senior Management with coordinating, developing and implementing the schools policy on computing;
- Promoting and overseeing staff INSET activities relating to computing development such as Safer Internet Day;
- Developing strategies for the efficient deployment of existing computing resources in the school;
- Consultation with the Head Teacher and staff regarding computing objectives
- Upholding an understanding and current technology, developments and trends relating to computing and its use in Education by attending network meetings;
- Liaising with Durham County staff and other educational establishments on matters relating to computing;
- Arranging for the upgrading or replacement of hardware and software as appropriate;
- Completing school action plans, monitoring and evaluations;
- Updating school policies relating to the teaching of computing.

Staff Development

To implement our computing vision effectively, all staff need to be confident in all areas of the computing curriculum. The Computing Co-ordinator and/or other staff will be able to support staff members in using various programmes. Following the computing scheme 'Teach Computing' allows all staff to revise known skills through hyperlinks on the plan. The lessons plans are very detailed to support all staff when teaching unfamiliar topics. The computing co-ordinator will complete and audit of skills to establish which areas of computing staff need more support with and use this to plan CPD.

The Computing Co-ordinator keeps up to date with the latest technological advancements and curriculum developments by attending conferences, network and school cluster meetings. Information is then fed back to the rest of the school during staff training and staff briefing.

Curriculum Coverage

KS1

National Curriculum Coverage — Key Stage 1 Computing Curriculum								
	Year 1				Year 2			
Units	Technology all around us	Digital Painting	Moving a robot	Digital Writing	Information Technology around us	Digital Photography	Programming A/B	Pictograms
Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions			x				x	
Create and debug simple programs			x				x	
Use logical reasoning to predict the behaviour of simple programs			x				x	
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	x	x		x	x	x	x	x
Recognise common uses of information technology beyond school	x		x		x	x		
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	x			x	x			x

LKS2

National Curriculum Coverage — Lower Key Stage 2 Computing Curriculum								
	Year 3				Year 4			
Units	Connecting Computers	Stop-frame Animation	Programming	Desktop Publishing	The Internet	Repetition in Shapes	Data Logging	Photo Editing
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts			X			X		
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	X		X			X	X	
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs			X			X		
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	X				X			
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content				X	X			X
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	X	X	X	X	X	X	X	X
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact					X			X

UKS2

National Curriculum Coverage — Upper Key Stage 2 Computing Curriculum								
	Year 5				Year 6			
Units	Sharing Information	Video Editing	Flat-File Databases	Lego EV3	Internet Communication	Webpage Creation	3D Modelling	Sensing
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	X			X	X			X
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	X			X				X
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs				X				X
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	X				X			
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content		X	X		X	X		
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	X	X	X	X	X	X	X	X
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	X	X				X	X	