



## The Crescent Primary School Computing Policy

### **1. Introduction**

**1.1** Computing is concerned with how computers and computer systems work, and how they are designed and programmed. Pupils studying computing will gain an understanding of computational systems of all kinds, whether or not they include computers. Computational thinking provides insights into many areas of the curriculum, and influences work at the cutting edge of a wide range of disciplines.

**1.2** The National Curriculum presents the subject as one lens through which pupils can understand the world. There is a focus on computational thinking and creativity, as well as opportunities for creative work in programming and digital media.

**1.3** There are three aspects of the Computing curriculum: **computer science** (CS), **information technology** (IT) and **digital literacy** (DL). The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. 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.

## 2. Objectives

The aims of the Curriculum are as follows:

	Key Stage 1	Key Stage 2
Computer Science	<p>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</p> <p>Create and debug simple programs</p> <p>Use logical reasoning to predict the behaviour of simple programs</p>	<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web</p> <p>Appreciate how [search] results are selected and ranked</p>
Information Technology	<p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content</p>	<p>Use search technologies effectively</p> <p>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</p>
Digital Literacy	<p>Recognise common uses of information technology beyond school</p> <p>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</p>	<p>Understand the opportunities [networks] offer for communication and collaboration</p> <p>Be discerning in evaluating digital content</p> <p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</p>

### **3. Equality of Opportunity**

At The Crescent Primary School we aim to give equal access and entitlement to the computing curriculum for all children. We teach computing to all children, whatever their ability. It is part of the school curriculum policy to provide a broad and balanced education to all. We provide learning opportunities that are matched to the needs of children. Pupils have the opportunity to work independently and as a team to build resilience and self-esteem through different tasks. In particular the idea of working in teams is vital in coding and debugging tasks.

The Computing Curriculum provides access to opportunities and experiences that some children may not have the opportunity to have. Different technologies allow pupils to access learning opportunities, whatever their ability.

Here are some examples of the IT equipment we use:

BeeBots

iPads

Android tablets

Laptops

Microbits - physical computing

Crumbles – physical computing

### **4. Impact on Teaching and Learning**

Computing will be taught both as a discrete subject and in a cross-curricular way when the opportunity presents itself. All classes in the school will follow a government initiative called The National Centre for Computing Education (NCCE). The NCCE curriculum is enriched through the use of our high-quality resources, programs and software. We hope the lessons we teach inspire future thinkers, innovators and problem solvers in an ever-changing world.

Within the Teach Computing Curriculum, every year group learns through units within the same four themes, which combine the ten strands of the National Centre for Computing Education's taxonomy. This approach allows us to use the spiral curriculum approach to progress skills and concepts from one year group to the next.

The four themes of the NCCE curriculum are as follows:

- Computing systems and networks
- Data and information
- Creating media
- Programming (A and B).

Below is a summary of the intended curriculum for Years 1 to 6:

	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 1	<b>Technology around us</b> Recognising technology in school and using it responsibly.	<b>Digital painting</b> Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally.	<b>Moving a robot</b> Writing short algorithms and programs for floor robots, and predicting program outcomes.	<b>Grouping data</b> Exploring object labels, then using them to sort and group objects by properties.	<b>Digital writing</b> Using a computer to create and format text, before comparing to writing non-digitally.	<b>Programming animations</b> Designing and programming the movement of a character on screen to tell stories.
Year 2	<b>Information technology around us</b> Identifying IT and how its responsible use improves our world in school and beyond.	<b>Digital photography</b> Capturing and changing digital photographs for different purposes.	<b>Robot algorithms</b> Creating and debugging programs, and using logical reasoning to make predictions.	<b>Pictograms</b> Collecting data in tally charts and using attributes to organise and present data on a computer.	<b>Making music</b> Using a computer as a tool to explore rhythms and melodies, before creating a musical composition.	<b>Programming quizzes</b> Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz.

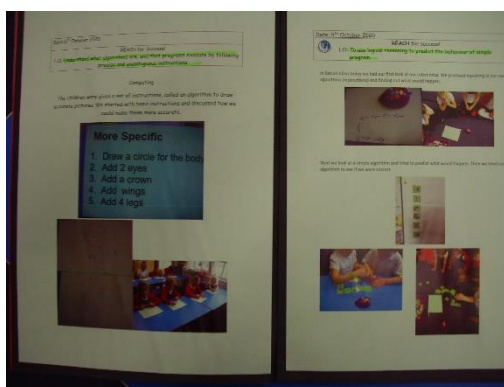
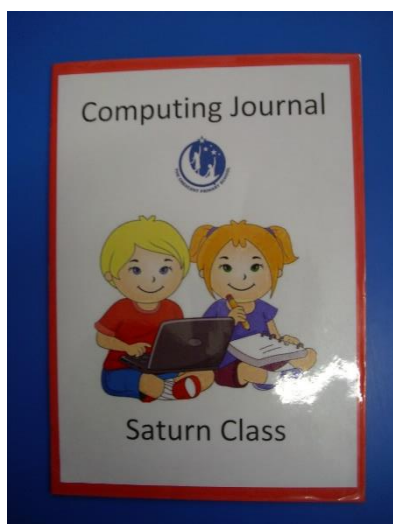
	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 3	<b>Connecting computers</b> Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.	<b>Stop-frame animation</b> Capturing and editing digital still images to produce a stop-frame animation that tells a story.	<b>Sequencing sounds</b> Creating sequences in a block-based programming language to make music.	<b>Branching databases</b> Building and using branching databases to group objects using yes/no questions.	<b>Desktop publishing</b> Creating documents by modifying text, images, and page layouts for a specified purpose.	<b>Events and actions in programs</b> Writing algorithms and programs that use a range of events to trigger sequences of actions.
Year 4	<b>The internet</b> Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.	<b>Audio editing</b> Capturing and editing audio to produce a podcast, ensuring that copyright is considered.	<b>Repetition in shapes</b> Using a text-based programming language to explore count-controlled loops when drawing shapes.	<b>Data logging</b> Recognising how and why data is collected over time, before using data loggers to carry out an investigation.	<b>Photo editing</b> Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.	<b>Repetition in games</b> Using a block-based programming language to explore count-controlled and infinite loops when creating a game.

	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 5	<b>Sharing information</b> Identifying and exploring how information is shared between digital systems.	<b>Video editing</b> Planning, capturing, and editing video to produce a short film.	<b>Selection in physical computing</b> Exploring conditions and selection using a programmable microcontroller.	<b>Flat-file databases</b> Using a database to order data and create charts to answer questions.	<b>Vector drawing</b> Creating images in a drawing program by using layers and groups of objects.	<b>Selection in quizzes</b> Exploring selection in programming to design and code an interactive quiz.
Year 6	<b>Internet communication</b> Recognising how the WWW can be used to communicate and be searched to find information.	<b>Webpage creation</b> Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.	<b>Variables in games</b> Exploring variables when designing and coding a game.	<b>Introduction to spreadsheets</b> Answering questions by using spreadsheets to organise and calculate data.	<b>3D modelling</b> Planning, developing, and evaluating 3D computer models of physical objects.	<b>Sensing</b> Designing and coding a project that captures inputs from a physical device.

Reception classes will use a more flexible/integrated approach when the children first start school and computing will be introduced in a play based environment and through the use of games;

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
IWB – Drawing and changing colours, sizes and types of pen.	Torches/lights IPADs – Exploring apps	Cameras/green screen. Being able to video and save.	Bee bots programming	Laptops-making stories and cartoons	Login to laptops Google maps

Each class will record their learning in a class Computing Journal which will showcase the learning, vocabulary and key skills developed in the lesson. Each entry in the journal will detail the objective of each lesson and show example work:





Teachers will encourage the development of skills through a variety of teaching methods including whole class, group and individual work. Vocabulary mats and Knowledge Organisers are used to help the children understand any key vocabulary that will be used and the resources and images that they

will need to use in order to access their learning:-

The Crescent Primary School Computing Knowledge Organiser

Topic: Algorithms Year 1 Autumn 1





What will I know at the end of this unit?

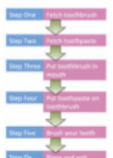
- Bee-Bots/Mice can be programmed to go forwards, backwards, left and right.
- Some sets of instructions can have problems or mistakes in them.
- You have to find the problem and fix it.

**Vocabulary**

**Algorithm**  
A set of step by step instructions used to carry out a task in a specific order.

**Programming**  
Teach a computer how to do things.

**Debugging**  
Debugging is when you find a problem in the instructions or program you have written and have to fix it.



The Crescent Primary School Computing Knowledge Organiser	
Topic: Computer Literacy – Word Processing	Year 2 Autumn 1



  

While using word processing programs you can format and edit the text in a variety of ways. You can make text:

- Bold
- Italic
- Underlined

Just as you would in your writing, you need to include spaces within typed words on word processing programs.


The enter key can be used to send the cursor to the next line.

Vocabulary
<b>Undo</b>
undo the last action you performed in the program.
<b>Redo</b>
redo the last action you performed in the program.
<b>Font</b>
a design for a set of characters.

The shift key can be used to switch between lower-case and upper-case letters.


To do this you hold the shift key down while you also press the letter you want to be upper-case.




What will I know at the end of this unit?
<input type="checkbox"/> Know where the keys are on the keyboard. <input type="checkbox"/> Use shift, space and enter correctly. <input type="checkbox"/> Know how to undo and redo. <input type="checkbox"/> Edit text.

The Crescent Primary School Computing Knowledge Organiser	
Topic: Programming – Lego Wedo	Year 4 Autumn 1





Vocabulary
<b>Algorithm</b>
A specific set of instructions.
<b>Loop</b>
When something repeats itself.
<b>Programme</b>
Give something a set of instructions in order for it to do something..
<b>Evaluate</b>
Assess what went well and what needs to be improved.

What will I know at the end of this unit?
<input type="checkbox"/> To understand what an algorithm is and how it can be used. <input type="checkbox"/> To solve problems using an algorithm with Lego Wedo. <input type="checkbox"/> Plan, build, programme and evaluate a robot using Lego Wedo.

Children will be taught that the use of computers can have implications outside the school environment. They will have the opportunity to use the Internet as a resource and communication tool, and be instructed on how to stay safe online.

## 5. Contributions of computing to teaching in other curriculum areas

### Maths

Children use and apply mathematics in a variety of ways when solving problems using technology. Younger children use technology to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results or when creating patterns, such as tessellations. They use simulations to identify patterns and relationships. When develop coding techniques using software such as scratch to write these and control programs.

### **Science**

Use of apps on the iPad can support our science curriculum. Data loggers and digital cameras can be used to support teaching of primary science and coding programs such as Scratch. Algorithms can be used in science lessons and evaluating investigations can use the same skills as debugging computer programs.

### **DT**

DT at the crescent will develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. The use of IT is integral to this approach and several units for upper key stage 2 have been planned in order to use computing to meet DT objectives.

### **PSHE**

Alongside our PSHE curriculum computing also has an impact as children learn to work together in a collaborative manner. They develop a sense of global citizenship by using the Internet and email. Through the discussion of moral issues related to electronic communication, children develop a view about the use and misuse, and they also gain a knowledge and understanding of the interdependence of people around the world. At the Crescent, we recognise the harm of internet misuse and in PSHE lessons teach children how to use the internet appropriately, responsibly and safely. The Computing and PSHE lead work closely together to ensure planning is kept up to date and relevant to today's changing world.

### **Spiritual, moral, social and cultural development**

Computing teaches children to develop a sense of awe and wonder regarding the new developments in technology. Computing also allows children to consider social issues such as cyber-bullying and staying safe online. Internet Safety is taught as part of the curriculum, see above.

### **6. Monitoring and Evaluation**

The monitoring of Computing takes place on a regular basis, although not necessarily across the whole school, through a variety of ways including classroom observations, work sampling and pupil conferencing. This policy will be reviewed and evaluated regularly.

