

Chigwell Row Infant School Computing Curriculum



Enabling our children to become
digitally literate and confident users of
Information Communication Technology.

Curriculum Aims

The aim of this curriculum is to ensure that our pupils receive the skills and knowledge required to become productive members of society. In order to achieve this the computing curriculum is divided into three aspects: Computer Science (CS), Information Technology (IT) and Digital Literacy (DL).

Computer Science is where children are taught the principles of information and computing, how digital systems work and how to use this knowledge through programming. Pupils then use Information Technology to create programs, systems and a range of content. Effective teaching in this subject will also ensure that children will become Digitally Literate; they will be able to use, express themselves and develop their ideas through information and communication technology.

National Curriculum Requirements

At Chigwell Row Infant School we use *Switched On ICT* in the EYFS and *Switched On Computing* in Years 1 and 2. This ensures that we have detailed coverage of the appropriate Early Learning Goals and the Computing Curriculum, making sure that skills are taught in a relevant and meaningful context. It is expected that computers and other ICT resources will be used throughout other areas of the school curriculum to enhance and support children's learning.

EYFS

Switched On ICT offers activities that will meet the following EYFS Learning Outcomes:

30 - 50 months:

- Knows how to operate simple equipment e.g. turns on CD player and uses remote control.
- Shows an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones.

- Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.
- Knows that information can be retrieved from computers

40 - 60 months:

- Completes a simple program on a computer.
- Uses 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.

The statutory National Curriculum requirements are as follows:

Key Stage 1

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions (CS)
- create and debug simple programs (CS)
- use logical reasoning to predict the behaviour of simple programs (CS)
- use technology purposefully to create, organise, store, manipulate and retrieve digital content (IT)
- 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 (DL)
- recognise common uses of information technology beyond school. (DL)

Year 1 Curriculum

Unit	Computing PoS	Expectations	Cross Curricula Links
<p>1.1 We are treasure hunters. Using programmable toys</p>	<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>Recognise common uses of information technology beyond school.</p>	<p>Understand that a programmable toy can be controlled by inputting a sequence of instructions.</p> <p>Develop and record sequences of instructions as an algorithm.</p> <p>Program the toy to follow their algorithm.</p> <p>Debug their programs.</p> <p>Predict how their programs will work.</p>	<p>Geography: Children use geographical language, and could use and make their own maps.</p> <p>Maths: Children recognise movements in a straight line and rotations, and combine them in simple ways. They start to recognise and make whole, half and quarter turns.</p> <p>History: Children find out about the past.</p> <p>PSHE and Citizenship: Children could consider the effect that pirates' actions had on others.</p> <p>English: Children provide clear instructions for moving around a map.</p>
<p>1.2 We are TV chefs. Filming the steps of a recipe.</p>	<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>Use logical reasoning to predict the behaviour of simple programs.</p> <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> <p>Recognise common uses of information technology beyond school.</p>	<p>Break down a process into simple, clear steps, as in an algorithm use different features of a video camera.</p> <p>Use a video camera to capture moving images develop collaboration skills.</p> <p>Discuss their work and think about how it could be improved.</p>	<p>English: Pupils develop their skills in spoken language by speaking audibly and fluently, and by participating in presentations.</p> <p>Art and design: Pupils illustrate the steps in their recipe on a simple storyboard.</p> <p>PSHE: Pupils are encouraged to make simple choices that improve their health and well-being.</p> <p>Maths: Pupils develop vocabulary for measures, e.g. quicker, slower, earlier, later.</p> <p>Science: Pupils have the opportunity to describe the simple physical properties of everyday materials.</p>

<p>1.3 We are painters. Illustrating an eBook</p>	<p>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.</p>	<p>Use the web safely to find ideas for an illustration. Select and use appropriate painting tools to create and change images on the computer. Understand how this use of ICT differs from using paint and paper. Create an illustration for a particular purpose. Know how to save, retrieve and change their work. Reflect on their work and act on feedback received.</p>	<p>Art and design: Children explore how ICT can be used to create original images. English: Children listen to and retell traditional tales, and may also write their own stories. History: The children's appreciation that traditional tales were written more than a hundred years ago will develop their chronological understanding.</p>
<p>1.4 We are collectors Finding images using the web.</p>	<p>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. 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.</p>	<p>Find and use pictures on the web. Know what to do if they encounter pictures that cause concern. Group images on the basis of a binary (yes/no) question. Organise images into more than two groups according to clear rules. Sort (order) images according to some criteria. Ask and answer binary (yes/no) questions about their images.</p>	<p>Science: Pupils consider the different ways in which animals can be grouped and sorted. Maths: Pupils put objects into sets and order a collection of objects. English: Pupils will need to use language effectively to search for animals and to describe how they're organising their pictures. PSHE: E-safety should be integrated into a cross-curricular approach to safe and responsible use of technology.</p>

<p>1.5 We are storytellers Producing a talking book.</p>	<p>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.</p>	<p>Use sound recording equipment to record sounds. Develop skills in saving and storing sounds on the computer. Develop collaboration skills as they work together in a group. Understand how a talking book differs from a paper-based book. Talk about and reflect on their use of ICT. Share recordings with an audience.</p>	<p>English: Children need to speak with clear diction and use appropriate intonation when reading and reciting text. Music: Children use sounds expressively to illustrate a story. PSHE: Children could consider how talking books improve the lives of people with particular disabilities.</p>
<p>1.6 We are celebrating. Creating a card digitally.</p>	<p>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.</p>	<p>Develop basic keyboard skills, through typing and formatting text. Develop basic mouse skills. Use the web to find and select images. Develop skills in storing and retrieving files. Develop skills in combining text and images. Discuss their work and think about whether it could be improved.</p>	<p>English: Pupils assemble/develop ideas on-screen. Art: Children select images to represent ideas and feelings. Music: Children could consider how music and sound might improve their card. PSHE: Children consider when people might receive or send a greetings card, and why these times are important to them. RE: This unit could be linked to how and why religious celebrations are important.</p>

E-safety road map, Year 1

UNIT E-SAFETY COVERAGE

Unit 1.1

We are treasure hunters

The children learn to use simple programmable toys safely and sensibly, as well as showing respect for the work of their peers. Web access is supervised and safe practices are encouraged. Similarly, any filming is done with appropriate consent and assent.

Unit 1.2

We are TV chefs

The pupils learn how to use digital video cameras safely and to show respect to those they are filming, including recognising the need for consent and assent. The importance of not sharing videos more widely than is appropriate is considered, as is the need to exclude information that might identify individuals from video recordings. When using the web, pupils learn to turn the screen off and tell their teacher if they encounter material that concerns them. The pupils also start to learn about copyright, recognising that they own the copyright in their original work and that this cannot be published or copied without their permission.

Unit 1.3

We are painters

In searching for images on the web, pupils work initially from a set of carefully chosen sites. They again learn that they should turn the screen off and tell their teacher if they encounter material that concerns them. If work is uploaded to a public area, the importance of protecting the children's identities is recognised, as is their intellectual property rights over their original work. An extension activity provides an initial opportunity for the children to learn some aspects of using email safely.

Unit 1.4

We are collectors

As pupils will be working with the web and searching for images, they'll need to make sure they use this technology safely, as well as showing respect for

others' intellectual property through observing copyright conditions. The pupils are taught to turn the screen off and let their teacher know if they have any concerns over content they encounter.

Unit 1.5

We are storytellers

The pupils learn to use audio recorders or microphones and audio recording software safely and sensibly. The pupils need to be aware of copyright material, and show appropriate respect for the owners of intellectual property when using technology. Regard is shown for appropriate consent and assent, school policies and third party terms and conditions if the pupils' stories are uploaded to external websites.

Unit 1.6

We are celebrating

The pupils have an opportunity to search for images on the web, and again learn to use technology safely, switching off the screen if they have concerns, and reporting these to their teacher. The pupils are taught to respect the copyright conditions associated with any third party images they use. Pupils only use photos of themselves if appropriate permission is in place. If children share their work, then attention is paid to protecting their identity and copyright. If they send cards by email they use a class address and consider some aspects of using email safely.

Useful Resources

Know It All for Primary

<http://www.childnet.com/kia/primary/>

Think U Know for KS1

http://www.thinkuknow.co.uk/5_7

Hector's World and Lee and Kim's Adventures

<http://www.hectorsworld.com/>

Year 2 Curriculum

Unit	Computing PoS	Expectations	Cross Curricula Links
<p>2.1 We are astronauts Programming on screen.</p>	<p>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.</p>	<p>Have a clear understanding of algorithms as sequences of instructions.</p> <p>Convert simple algorithms to programs.</p> <p>Predict what a simple program will do.</p> <p>Spot and fix (debug) errors in their programs.</p>	<p>Maths: Children will learn about the properties of position, movement and turning. They will also develop their understanding of angles as a measure of turning, using whole turns, half-turns and quarter-turns.</p> <p>English: Children will have the opportunity to use language associated with giving instructions.</p> <p>Art and design: Children could design their own spaceships and space backgrounds.</p> <p>D&T: Children could make a model spaceship.</p>
<p>2.2 We are games testers Exploring how computer games work.</p>	<p>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. Use logical reasoning to predict the behaviour of simple programs. Recognise common uses of information technology beyond school. Use technology safely and respectfully, keeping personal information private.</p>	<p>Describe carefully what happens in computer games.</p> <p>Use logical reasoning to make predictions of what a program will do. Test these predictions.</p> <p>Think critically about computer games and their use.</p> <p>Be aware of how to use games safely and in balance with other activities.</p>	<p>English: Pupils' own explanations of how algorithms work will link with their work in English.</p> <p>Science: When testing their predictions, pupils are using a simple version of the scientific method.</p>
<p>2.3 We are photographers. Taking better photos.</p>	<p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Recognise common uses of information technology beyond school.</p>	<p>Consider the technical and artistic merits of photographs.</p> <p>Use a digital camera or camera app.</p> <p>Take digital photographs.</p>	<p>Ideally the theme for the photos should relate to a topic in another curriculum area.</p> <p>Art and design: Children review digital photos and consider</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.	Review and reject or pick the images they take. Edit and enhance their photographs. Select their best images to include in a shared portfolio.	how to create effective images. Maths: Some aspects of composition, such as the 'rule of thirds', and technical aspects of digital images, such as pixels and colour values, draw on mathematical understanding.
2.4 We are researchers Researching a topic	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.	Develop collaboration skills through working as part of a group. Develop research skills through searching for information on the internet. Improve note-taking skills through the use of mind mapping. Develop presentation skills through creating and delivering a short multimedia presentation.	English: The children discuss and practise effective note taking. History: This unit touches on the concept of reliability of evidence. Ideally, integrate this research with a topic the children are already studying in another subject area, such as science, history, geography or RE.
2.5 We are detectives. Collecting clues	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.	Understand that email can be used to communicate. Develop skills in opening, composing and sending emails. Gain skills in opening and listening to audio files on the computer. Use appropriate language in emails. Develop skills in editing and formatting text in emails. Be aware of e-safety issues when using email.	English: Children apply their spoken language skills when listening to a witness statement. They also apply skills in writing for different purposes, and proofreading to check for errors in spelling, grammar and punctuation.
2.6 We are zoologists Collecting data about bugs	Use technology purposefully to create, organise, store,	Sort and classify a group of items by answering questions.	Science: The children learn to identify and name a variety of

	<p>manipulate and retrieve digital content.</p> <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>Collect data using tick charts or tally charts.</p> <p>Use simple charting software to produce pictograms and other basic charts.</p> <p>Take, edit and enhance photographs.</p> <p>Record information on a digital map.</p>	<p>animals in their habitats.</p> <p>Maths: This unit provides opportunities to record, interpret, collate, organise and compare information.</p> <p>Geography: There are opportunities to introduce simple mapping and location skills, geographical vocabulary and fieldwork skills.</p>
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E-safety road map, Year 2

UNIT E-SAFETY COVERAGE

Unit 2.1

We are astronauts

The pupils must let their teacher know if they encounter inappropriate material when they search the web. If the pupils use third-party images in their projects, they should use images with public domain or Creative Commons licences. The pupils may upload their projects to the Scratch website, if they have registered for accounts using a parent's e-mail address. They learn to observe MIT's terms and condition.

Unit 2.2

We are games testers

There are concerns about the violent nature of some games. Choosing games wisely, including observing PEGI age restrictions and playing in moderation, are aspects of the safe and respectful use of technology that pupils learn about in this unit. As in Unit 2.1, the pupils may upload their projects to the Scratch website, if they have registered for accounts using a parent's e-mail address. Comments on the Scratch website are not moderated before they appear, although the pupils can report any which are inappropriate. This provides an

opportunity to learn about where to go for help and support when they have concerns about content or contact.

Unit 2.3

We are photographers

The children learn that once images are posted online, it's impossible to control what happens to them. Facial recognition software and geotagging mean that those posting images might inadvertently fail to keep some personal information private. The children learn how to minimise these risks, and learn what they should do if they have concerns about images they encounter on the web. The children also learn about what is acceptable and unacceptable to photograph, for example, that it is usually not a good idea to take or share photographs in which children can be identified, or that might reflect badly on the school.

Unit 2.4

We are researchers

The pupils consider how to stay safe while researching online, and show respect for others' ideas and intellectual property by citing their sources, and using licensed images. Safe search filters are in place for using Google or Bing and school internet access is filtered.

Unit 2.5

We are detectives

The pupils learn about some of the risks associated with email. They learn that attached files can contain viruses or other harmful programs, that email addresses and embedded links can be 'spoofed', and that 'spam' is a common problem. It is recommended that all emails are sent and received via a single class email address. The password for this account is not shared with children. If the children do use individual accounts, they'll need to keep their account details private and share their email address only with people they know and trust.

Unit 2.6

We are zoologists

The pupils again learn that when sharing photographs and geo-location information online they need to consider the importance of keeping personal information private; they achieve this by not including names or photographs of people. The pupils are taught to respect rules for using digital equipment when out of the classroom, to ensure the equipment is kept safe and that they are not so focused on using it that they become unaware of risks around them.

Useful resources

BBC Stay safe <http://www.bbc.co.uk/help/web/staysafe>

Kidsmart <http://www.kidsmart.org.uk/>

Childnet
<http://www.childnet.com/kia/primary/smartadventure/chapter4.aspx>

Assessment

Teachers will complete a spreadsheet for each child which indicates if they are emerging, expected, or exceeding the learning outcomes for each area.

Vocabulary Expectations by the end of KS1.

Algorithms	A process or set of rules to be followed. A set of instructions.
Create	To make.
Debug	To remove bugs (problems) from a program or algorithm.
Predict	To make an educated guess what will happen in the future.
Program (noun)	A set of instructions (algorithms)
Program (verb)	To create a set of instructions for a computer.