

# Computing Plans - Year 1

	<b>New Computing Programme of Study</b>	<b>Area of computing</b>	<b>Year 1 Outcome</b>
Developing simple algorithms, controlling, sensing and simulating the real world	<p>Use logical reasoning to predict the behaviour of simple programs.</p> <p>Understand what algorithms are, how they are implemented as programs on digital devices and that programs execute following a sequence of instructions.</p> <p>Write simple programs.</p>	<p>Modelling</p> <p>Control and Programming</p>	<p>Explore options in simple simulations, making choices to achieve an outcome.</p> <p>Direct a floor or on-screen robot using directional language. Record the sequence using an agreed set of symbols to create an algorithm.</p>
Finding out how computers, software, the internet, web and search engines work and how they impact on their lives and society	<p>Recognise common uses for digital technology beyond the school</p> <p>Keep personal information private.</p>	<p>Handling data</p> <p>Research</p> <p>Online Communication</p>	<p>Collect, sort and display information. Use the collected data to answer simple questions.</p> <p>Explore a variety of resources to access a range of information.</p> <p>With help log on to, personalise and begin to use the tools within an online space. Begin to remember a password.</p>
Using software and devices to collect, analyse, evaluate and present information and data	<p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content</p> <p>Organise store and retrieve data in a range of digital formats</p>	<p>Multimedia and word processing</p> <p>Graphics</p> <p>Digital video</p> <p>Music and sound</p>	<p>Combine text, images and possibly other features to create either a printable document or a simple multimedia presentation</p> <p>Use the tools within a paint package to combine different elements and create a picture. Store and retrieve their work.</p> <p>Use a digital camera/computer/tablet to record digital footage. Create basic animations and slideshows using appropriate software.</p> <p>Use computing to listen to and combine sounds; create simple sounds. Use a range to devices to explore ways that sounds can be produced and manipulated.</p>

## Using the plans

### **Planning Notes for the new computing curriculum and a guide to terminology.**

An **algorithm** is a set of specific steps or instructions for solving a problem. “Simple programs” may be sequences of instructions for controlling the movement of a robot (e.g. Bee Bot, ProBot or Big Trak programmable toy) or an on screen turtle (Logo) or sprite (e.g. Scratch).

**Modelling** is the process of developing a representation of a real world issue, system, or situation, that captures the aspects of the situation that are important for a particular purpose, while omitting everything else.

**Computational thinking** is thinking in a logical, sequenced way to develop a solution to a problem. It is something that people do (rather than computers), and includes the ability to think logically and algorithmically.

### **Cross-curricular planning**

*At all Key Stages, information and communication technology should be used to enhance teaching and learning right across the curriculum: this is often called Technology Enhanced Learning (TEL).*

(NAACE/BCS 2013)

When planning an computing outcome, try to choose one which support objectives in at least one other subject. This is the key to finding sufficient time in the day: if your work is both Literacy and ICT, you can teach two skills in one slot, and if it covers Geography objectives as well, so much the better! Doing this, you may need to teach some lessons discretely and some lessons together, such as doing some knowledge and skills work before in the Literacy unit, then finding time for teaching a computing skill, which will support the Literacy work. Revisiting areas of computing covered previously is also an excellent way of embedding into other subjects: if you have taught a short unit on using a paint package, the children will be ready for a Mathematics lesson using 2D shapes to draw a picture.

Of course, some uses of technology are very straightforward and will not need skill teaching beforehand: using an online simulation is an example of this. Skills taught in other years allow the technology to fit behind the History or Science work Sometimes it might also be an opportunity to develop a knowledge of how technology works, or understanding of the principles of computation, digital media or information systems.

### **Differentiation and assessment**

It is important for all children to learn to the best of their ability. While it is beneficial for more able children to support the less able, using this too much can mean that the less able child never gets a turn (so learns little), or the more able child is held back. Working together gives you huge opportunities for collaboration peer learning and peer coaching. Differentiation can then take place: some children could be given a simpler task, or use the same package but be taught fewer skills to use, while others can spend more time in self- and peer-assessment, planning, evaluating and improving their work.

We are currently trialling a new set of levels to help measure pupils overall attainment as they complete the skills and essential knowledge. The level descriptors are at the top of each unit and there will be more guidance available shortly.

## Modelling

Use logical reasoning to predict the behaviour of simple programs

Key Understanding	Key Skills	Outcomes
<p>To understand that:</p> <ul style="list-style-type: none"> <li>● computers can represent real or fantasy situations</li> <li>● a computer representation allows users to make choices and that different decisions produce different outcomes</li> <li>● a computer model is not an exact replica of the original</li> <li>● they can use a computer to create representations of various scenarios</li> </ul>	<ul style="list-style-type: none"> <li>● to use a mouse/trackpad/touch screen to move and place items accurately on a screen</li> <li>● to use simple tools in a painting program</li> <li>● use apps and programs to explore and experiment with different tools and make choices that create different effects</li> </ul>	<p><b>Explore options in simple simulations, making choices to achieve an outcome.</b></p> <p><b>Example outcomes:</b></p> <ul style="list-style-type: none"> <li>● Use Walking with Dinosaurs app to explore prehistoric worlds (augmented reality) and stimulate creative writing (Sci/Lit)</li> <li>● Use Toca Builders app to build and design shapes and patterns (D.T.)</li> <li>● Use Toca Kitchen app to explore combinations and predict outcomes.</li> <li>● Use Curious Playground app to create puzzles and matching games.</li> <li>● Use Wii Safari (software) to learn about African animals (Sci/Geog)</li> <li>● Use BBC Science Clips website to simulate simple science experiments. (Sci)</li> <li>● Use Tiny Tap app to investigate pre-made games to explore options and make choices.</li> </ul>
<p>Suggested resources:                      Modelling websites eg Big Day Out (<a href="http://bdo.swgfl.org.uk">http://bdo.swgfl.org.uk</a>) and BBC Science Clips (<a href="http://www.bbc.co.uk/schools/scienceclips">www.bbc.co.uk/schools/scienceclips</a>), modelling software eg Simple City, My World, Wii games</p> <p>Apps:                      Toca Kitchen, Toca Hair Salon, The Little Crane that Could, Toca Builder, Traffic Control, Bridge Free, Little Crane, Epic Citadel, Toca Doctor, Curious Playground, Walking with Dinosaurs, Tiny Tap</p>		

## Control and Programming

Understand what algorithms are, how they are implemented as programs on digital devices and that programs execute following a sequence of instructions  
Write simple programs

Key Understanding	Key Skills	Outcomes
<p>To understand that:</p> <ul style="list-style-type: none"> <li>• Machines and devices can be controlled by a sequence of physical actions</li> <li>• Sequence affects outcome</li> <li>• Instructions can be recorded for replication and amendment</li> </ul>	<ul style="list-style-type: none"> <li>• To use a range of styles of control e.g. tilt and turn/instructional/blocks to direct a robot.</li> <li>• to use common directional language, e.g. right, left, forwards, backwards</li> <li>• to program a real or virtual robot to follow a route (<b>algorithm</b>)</li> <li>• to record a route by using an agreed set of symbols, e.g. sequencing directional flashcards</li> <li>• predict outcomes, e.g. when the next command is entered (<b>logical reasoning</b>)</li> <li>• experience controlling other devices such as sound recording devices, music players, video recording equipment and digital cameras, iPods, iPads, Wii, Xbox Kinect</li> </ul>	<p>Direct a floor or on-screen robot using directional language. Record the sequence using an agreed set of symbols to create an algorithm.</p> <p><b>Example outcomes:</b></p> <ul style="list-style-type: none"> <li>• Control Cubetto using directional blocks in sequence to reach a goal (Num)</li> <li>• Use a floor robot with an appropriate mat as part of a story, eg Rosie’s Walk, Katy Morag, Handa’s surprise (Lit)</li> <li>• Use Jam Sandwich unplugged activity to develop directional language and understanding of sequences of instructions</li> <li>• Use Bluebot app to read through an algorithm and predict an outcome. (Num)</li> <li>• Begin to work on Course 1 on Code Studio Online</li> <li>• Control Sphero to navigate an obstacle course set up in the classroom.</li> </ul>
<p>Suggested resources: Floor robot (eg Bee-bot, BlueBot, Cubetto, Dot and Dash), Sphero, mats and obstacles, iPad/iPod, Code Studio Online: <a href="http://bit.ly/1VWqejQ">http://bit.ly/1VWqejQ</a> unplugged programming activities e.g. Robot Turtles board game, Human Crane Activity (<a href="http://bit.ly/1avNst5">http://bit.ly/1avNst5</a>), Jam Sandwich Activity: <a href="http://bit.ly/1KLnGiv">http://bit.ly/1KLnGiv</a></p> <p>Apps: Bee Bot, Bluebot, The Foos, Go/Path (Dash robot apps), Kodable, Alex the Robot, Tynker, Toca Builders</p>		

Handling Data		
Organise store and retrieve data in a range of digital formats		
Key Understanding	Key Skills	Outcomes
<p>To understand that:</p> <ul style="list-style-type: none"> <li>• information comes from different sources</li> <li>• data can be collected and information can be represented using pictures</li> <li>• computing allows data to be added and changed quickly</li> <li>• there is a connection between data collected in class (verbally, tally etc) and presented on screen</li> </ul>	<ul style="list-style-type: none"> <li>• Sort objects on screen using one criterion then different criteria</li> <li>• Sort on-screen objects in different ways and relate this to real objects</li> <li>• To collect data on class or topic and represent the information using a pictogram package</li> <li>• Use a pictogram to help create and help answer questions</li> <li>• Save and retrieve work/images</li> </ul>	<p><b>Collect, sort and display information. Use the collected data to answer simple questions.</b></p> <p><b>Example outcomes:</b></p> <ul style="list-style-type: none"> <li>• Interpret a pre-made pictogram using Tizzy’s Toybox showing favourite fruits (PSHE, Sci)</li> <li>• Use online sorting simulations to learn about sorting in different ways.</li> <li>• Collect and analyse class-based data about themselves using Textease (e.g.favourites/pets/homes) (Science/DT/Geog/Hist)</li> <li>• Save an image from the internet to the iPad camera roll to view later/use in media work</li> </ul>
<p><b>Suggested Resources:</b>                      Pictogram software, eg. 2Count, 2Investigate, RM Starting Graph, Pictogram, Textease, Mr Haughton’s Infant Encyclopedia, Tizzy’s Toybox, KS1 Bitesize data collection activity: <a href="http://bbc.in/1ITrccV">http://bbc.in/1ITrccV</a>, online sorting simulations: <a href="http://bit.ly/1heT3bs">http://bit.ly/1heT3bs</a>, online pictograph maker: <a href="http://bit.ly/1CGCPyc">http://bit.ly/1CGCPyc</a></p>		

## Research

Computing PoS: Recognise common uses for digital technology beyond the school

Key Understanding	Key Skills	Outcomes
<p>To understand that:</p> <ul style="list-style-type: none"> <li>● information comes from different sources</li> <li>● information can exist in various forms (multimedia, image, sound, text, film)</li> <li>● information can be easier/faster to find using computing</li> <li>● computers use icons to provide information and instructions.</li> </ul>	<ul style="list-style-type: none"> <li>● To use the appropriate buttons to navigate a website</li> <li>● Select and listen to onscreen information</li> <li>● Use buttons/icons to do different things e.g record, pause, play, move forward, move back</li> <li>● Control a resource to access the information they require e.g. web site, tablet, eReader</li> </ul>	<p><b>Explore a variety of resources to access a range of information.</b></p> <p><b>Example Outcomes:</b></p> <ul style="list-style-type: none"> <li>● In guided or shared reading, use an online or eBook and talk about how it compares to a paper-based book. (Lit)</li> <li>● Compare modern with old technology and discuss the benefits of new technology.</li> <li>● Investigate what technology they use in their own home. Compare this to what used to be used before technology was available. (Hist)</li> </ul>
<p><b>Suggested Resources:</b>                      Websites related to topics; digital camera/camcorder/microscope/MP3 player; websites and eBooks with stories and information for use across the curriculum e.g. <a href="http://bit.ly/1znb5zu">http://bit.ly/1znb5zu</a></p>		

### Online communication

Keep personal information private.  
Organise store and retrieve data in a range of digital formats

Key Understanding	Key Skills	Outcomes
<p>To understand that:</p> <ul style="list-style-type: none"> <li>● a Learning/Media Platform is an online space which can be accessed anytime and anywhere</li> <li>● logging on with a user name and password allows access to a private online space</li> <li>● although parents and teachers can help you log on, passwords should never be shared with anyone else</li> <li>● Work can be shared with others via an Online Platform</li> </ul>	<ul style="list-style-type: none"> <li>● Log on to a personal web space with a password as part of a class or group with support</li> <li>● Use the tools within a simple Learning Platform (e.g. following links to websites, paint, diary, text)</li> <li>● With support, view and discuss/comment on work that has been shared to the Online Platform</li> <li>● As a class or group, share different types of media to the Online Platform with support.</li> </ul>	<p><b>With help, log on to, personalise and begin to use the tools within an online space. Begin to remember a password.</b></p> <p><b>Example outcomes:</b></p> <ul style="list-style-type: none"> <li>● Share work or photographs as a class to Makewaves platform (Lit)</li> <li>● Create daily class Tweets to share experiences and learning with other schools.</li> <li>● As a class, view school/class Rebelmouse page or Twitter feed.</li> <li>● Share class songs, number rhymes and phonics songs on the Online Platform as part of a home learning resource.</li> <li>● Use Croak.it to share sound clips online</li> </ul>

**Suggested Resources:**  
Makewaves, eSchools, My Learning, Twitter, Rebelmouse, Croak.it, DB Primary, Code Studio Online <http://bit.ly/1VWqeJQ> Purple Mash

### Multimedia and Word Processing

Use technology purposefully to create, organise, store, manipulate and retrieve digital content  
Organise store and retrieve data in a range of digital formats

Key Understanding	Key Skills	Outcomes
<p>To understand that:</p> <ul style="list-style-type: none"> <li>ideas can be communicated and presented using digital images, text and sound.</li> <li>they can combine a variety of media to communicate their ideas.</li> </ul>	<ul style="list-style-type: none"> <li>Produce text on screen, understanding that text can be changed in a variety of ways to make it clear and error-free</li> <li>Add images to pages</li> <li>Use a word bank to create simple sentences (if available)</li> <li>Add sounds and animation (if available)</li> <li>Write captions for digital images</li> </ul> <p><b>When word processing children should begin:</b></p> <ul style="list-style-type: none"> <li>To use two fingers to enter text.</li> <li>To use the space bar.</li> <li>To use the backspace delete key.</li> <li>To add full stops</li> </ul>	<p><b>Combine text, images and possibly other features to create either a printable document or a simple multimedia presentation.</b></p> <p><b>Example Outcomes</b></p> <ul style="list-style-type: none"> <li>Write their own page for an information book, using digital photographs to support the writing/voice recordings and illustrate text e.g. using Buncee app</li> <li>Record processes, such as investigations in science, photographically. Shuffle the order of the photographs and use re-sequencing activities to support oral recounts and explanations e.g. using Picasa/Shadow Puppets Edu</li> <li>Take a limited number of still photographs to depict key episodes in narrative (drama or puppets/ toys). Sequence, and construct narrative by writing the photographs e.g. using Picasa/Photostory/Sonic Pics</li> <li>Insert audio recordings into a text as a form of annotation or marking Storymaker/eBooks</li> </ul>

**Suggested Resources:**

Multimedia authoring software: 2Create a story, Tizzy’s First Tools, Purple Mash.

Word processing software: 2Publish, 2Publish+, Textease, NB Microsoft Word is not suitable for this age group

Apps:  
Photostory, eBook Writer (e.g. Book Creator/Book Writer or similar), Tiny Tap, Pic Collage, Buncee, Shadow Puppets Edu, Curious Playground

## Graphics

Use technology purposefully to create, organise, store, manipulate and retrieve digital content  
Organise store and retrieve data in a range of digital formats

Key Understanding	Key Skills	Outcomes
<p>To understand that:</p> <ul style="list-style-type: none"> <li>technology can be used to create and change the appearance of images</li> <li>pictures can be assembled by using a range of tools</li> <li>different elements can be combined to create an image</li> </ul>	<ul style="list-style-type: none"> <li>Use basic tools to improve their work e.g. brushes, tool sizes, rub out and undo.</li> <li>Explore and use other tools in the software (eg fill, spray can, cut-out, stamps)</li> <li>Use different effects and filters to change the appearance of an image.</li> <li>Save and retrieve an image with help.</li> <li>To be involved in the process of transferring images from one device to another or retrieving pictures from a saved area such as the Camera Roll</li> </ul>	<p><b>Use the tools within a paint package to combine different elements and create a picture. Store and retrieve their work.</b></p> <p><b>Example outcomes:</b></p> <ul style="list-style-type: none"> <li>Use a paint package to create a picture related to a topic, saving successfully to a folder.</li> <li>Combine images saved to the camera roll in Pic Collage app to sequence and document a school event.</li> <li>Take photographs of sources of light around the school area (Sci)</li> <li>Use an image editing app/program to alter the appearance of a photograph and add their own labels/stickers/drawings e.g. using iPastels</li> </ul>

Suggested Resources:  
Paint program (2Paint, 2Paint a Picture, Tizzy's First Tools, Revelation Natural Art, Dazzle, 2Create A Story, SWGfL Merlin paint **NB Microsoft Paint is not as easy to use, and is not recommended.**

Apps:

Digital video		
Use technology purposefully to create, organise, store, manipulate and retrieve digital content		
Organise store and retrieve data in a range of digital formats		
Key Understanding	Key Skills	Outcomes
To understand that: <ul style="list-style-type: none"> <li>digital media can be captured then transferred between devices</li> <li>there is a difference between still and moving images</li> <li>Moving images can be created and altered using software</li> </ul>	<ul style="list-style-type: none"> <li>To use and understand the different parts of a digital camera or recording device with support.</li> <li>To record and play back photographs or film footage using a digital camera/computer/tablet.</li> <li>To record simple ‘puppet-style’ animations with support using suitable software.</li> </ul>	<p><b>Use a digital camera/computer/tablet to record digital footage. Create basic animations and slideshows using appropriate software.</b></p> <p><b>Example outcomes:</b></p> <ul style="list-style-type: none"> <li>Take photographs of 2D and 3D shapes round the school and sequence (adding a voiceover) using Shadow Puppets Edu (Maths)</li> <li>Use a tablet device to film children working in the outdoor area and play back to a member of staff.</li> <li>With support, create a simple animation using the Puppet Pals app based on topic work.</li> <li>Use Chatterkid app to animate a still image based on topic.</li> </ul>
<p><b>Suggested Resources:</b> Digital camera, digital camcorder, digital microscope, tablet</p>		

Apps:  
Puppet Pals, Sonic Pics, Sock Puppets, Doodlecast, Shadow Puppets Edu, Morfo, Photospeak, Chatterkid

## Music and Sound

Use technology purposefully to create, organise, store, manipulate and retrieve digital content  
Organise store and retrieve data in a range of digital formats

Key Understanding	Key Skills	Outcomes
<p>To understand that:</p> <ul style="list-style-type: none"> <li>• sounds convey information</li> <li>• sounds can be collected and stored digitally using a range of different hardware and software</li> <li>• electronic and live sounds can be combined in a performance</li> <li>• Sounds can be shared with others</li> </ul>	<ul style="list-style-type: none"> <li>• Use icons and buttons to play sounds</li> <li>• Use a sound recorder tool/or on screen recorder to collect and store information as sound</li> <li>• Record their own sounds in multimedia software</li> <li>• Select sounds to play with images and text in multimedia software</li> <li>• Explore how a program/app can be used to create different sounds, beats and patterns.</li> </ul>	<p><b>Use computing to listen to and combine sounds; create simple sounds. Use a range to devices to explore ways that sounds can be produced and manipulated.</b></p> <p><b>Example</b></p> <ul style="list-style-type: none"> <li>• Use sound buttons in a program to hear sounds and link them to pictures e.g Using Tiny Tap app</li> <li>• Use a sound recorder e.g. Easispeak to record sounds around the school or local area and use them as a stimulus for writing</li> <li>• Make a simple musical phrase to accompany a story or firework picture (Lit, Hist)</li> <li>• Record and share a class phonics song on the Online Platform.</li> <li>• Experiment with Jelly Band app to create different patterns and sounds.</li> </ul>

**Suggested Resources:**

Easispeak microphone, programs with sound buttons, 2 Simple Music Toolkit (Purple Mash), Incredibox.

Multimedia software with sound recording: 2create a story, Tizzy's first tools, Textease,

**Apps:**

Croak.it, Beatwave, Jelly Band, Sonic Pics, Doodlecast, Soundslate, Curious Playground (composing tool), Sago Mini Sound Box, Tiny Tap, Tune Train, Disco Fingers, Singing Fingers, Color Band