

Tower View Primary School

Subject Curriculum: Computing (2020)

Curriculum Aims

At Tower View, the computing curriculum aims to prepare pupils for life and work in the modern world by developing a range of computing skills and teaching pupils how to use them effectively and safely both inside and outside of the school setting.

Key Concepts of Computing

The computing curriculum is set out to develop the skills of pupils in four key areas of computing:

Internet safety and competence

In an increasingly online world, our pupils need to have the skills to access resources and information they need online while protecting themselves, their personal information and their personal wellbeing from the potential dangers of the internet. Children should learn the importance of privacy and security when accessing the internet and how to protect themselves from online attacks as well as how to find help if they are targeted on the internet. We also need our pupils to be aware of the potential issues for young people surrounding social media, the pressures that it can inflict on them and the effect it can have on mental health.

This should all be delivered in a way that promotes the understanding that the internet itself is not a dangerous tool and should not be feared, but used carefully and safely.

Creativity

Creativity is at the heart of our entire curriculum at Tower View and, as such, is promoted within computing. Our children are encouraged to use a range of software creatively across the curriculum for a wide variety of projects. These include photography and photo editing, animation, filming and video editing, artwork and drawing and many other creative applications.

Coding

As technology develops and spreads further and further in the modern world, the skills of computer coding become a more integral part of the working world. Software development jobs have increased massively in the last decade worldwide and there are now an estimated 9 million app developers globally, a job which did not exist before 2008.

As such, we aim to give our children an introduction to the skills that they will require to develop their abilities in computer sciences. These skills include abstraction, logical thinking, use of algorithms and problem solving skills. We aim for our children to have experience in both block based and script based coding and apply these skills to practical projects.

Productivity

As with internet skills, it is important in the modern workplace for workers to have a knowledge of how to use productivity software effectively for a range of purposes. Therefore, we give our pupils the opportunity to use word processing, presentation and spreadsheet software for a range of tasks, both individually and in conjunction with others. These skills are then applied widely in school across the entire curriculum.

Internet Safety & Competence	Coding	Productivity	Creativity
<p>Online Safety In year 1, students should learn to:</p> <ul style="list-style-type: none"> - Create, name and date digital creative work to show ownership of content. - Use the internet to safely search for images. - Understand how to communicate safely online. - Understand what personal information should be kept safe online. - apply internet safety knowledge to help others stay safe online. <ul style="list-style-type: none"> - <i>recognise common uses of information technology beyond school.</i> - <i>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.</i> 	<p>Bluebot In year 1, children should continue to develop their understanding of basic programming with Bluebot.</p> <p>They should:</p> <ul style="list-style-type: none"> - attempt to find multiple ways of solving problems. - Start to use decomposition to decide how to tackle a problem before coding. - Debug pre written lines of code and their own code to find errors <ul style="list-style-type: none"> - <i>create and debug simple programs</i> - <i>Use logical reasoning to predict the behaviour of simple programs</i> 	<p>Pages In year 1, children should develop the following skills in using Pages:</p> <ul style="list-style-type: none"> - Typing with increasing speed and accuracy. - Using the editing tool (paintbrush) to edit the font style, size and colour. <p>Keynote In year 1, children should develop the following skills in using Keynote:</p> <ul style="list-style-type: none"> - Creating a new presentation. - Adding slides to a presentation using templates - Adding text and pictures to a slide <ul style="list-style-type: none"> - <i>use technology purposefully to create, organise, store, manipulate and retrieve digital content.</i> <p>Numbers In year 1, children should develop the following skills in using Numbers:</p> <ul style="list-style-type: none"> - Creating new spreadsheets and tables in Numbers. - Editing the size of columns and rows to suit the desired purpose. - Inputting data into a spreadsheet. 	<p>Camera & Photos In year 1, children should continue to use the camera app on the ipad to capture images creatively and start to use the Photos app to view and present photos. This should involve developing the following skills:</p> <ul style="list-style-type: none"> - Taking photographs using the camera app. - Using the front and rear cameras to take photographs. - Viewing photographs taken using the Photos app - Select and delete unwanted photos in the Photos app - Share photographs using AirPlay and Screen Mirroring <p>Doodle Buddy Draw In year 1, children should explore using the iPad to sketch and draw. Children should:</p> <ul style="list-style-type: none"> - Experiment with the range of paintbrushes available. - Draw using a range of colours. - Experiment with stamps, stencils and backgrounds to create different pictures. - Save and share their work as images. <ul style="list-style-type: none"> - <i>use technology purposefully to create, organise, store, manipulate and retrieve digital content.</i>

Internet Safety & Competence	Coding	Productivity	Creativity
<p>Online Safety In year 2, children should learn to:</p> <ul style="list-style-type: none"> - Understand that information put online leaves a digital footprint. - Use keywords in an online search to find out about a topic. - Recognise whether a website is appropriate for children. - To identify kind and unkind behaviour online. - Create content for an online blog (SeeSaw) - Use an online blog safely and respectfully. - Post positive comments and responses on a blog. <p><i>- recognise common uses of information technology beyond school.</i></p> <p><i>- 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.</i></p>	<p>Scratch JR In year 2, children should start to put together programs that serve a particular purpose using Scratch Jr. This should cover the following skills:</p> <ul style="list-style-type: none"> - Creating a new project in Scratch JR. - Adding characters and items into a scene. - Adding new scenes to a project. - Changing the background of a scene. - Using instructions to move characters and items. - Use a range of start points (yellow blocks) to start animation in different ways (e.g. on green flag, on tap, on bump). - Use a range of end points (red blocks) to end animation in different ways (end, repeat forever, go to page...). - Start to use instructions such as “wait”, “stop” and “repeat” to create different effects. - Debug their own code (and that of others) to correct issues causing unexpected results. - Create animated scenes that tell a short and simple story over multiple scenes. <p><i>- Create and debug simple programs</i></p> <p><i>- Use logical reasoning to predict the behaviour of simple programs</i></p> <p><i>- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</i></p>	<p>Pages In year 2, children should develop the following skills in using Pages:</p> <ul style="list-style-type: none"> - Continue to develop speed and accuracy of typing skills. - Add basic elements such as pictures and shapes using the + tool. - Edit items added in using the paintbrush tool. <p>Keynote In year 2, children should develop the following skills in using Keynote:</p> <ul style="list-style-type: none"> - Adding elements such as text boxes, shapes and images to a blank slide. - Editing text, shapes and images using the paintbrush tool. - Presentation skills (screen mirroring and reading aloud from their slides). <p>Numbers In year 2, children should develop the following skills in using Numbers:</p> <ul style="list-style-type: none"> - formatting selected cells to create tables by changing the appearance of borders and shading of cells - Adding basic charts to represent the data shown in the table. <p><i>- use technology purposefully to create, organise, store, manipulate and retrieve digital content.</i></p>	<p>Garage Band To begin with, children should be encouraged to explore the app and experiment with the different instruments, finding out what each sounds like and how they work.</p> <p>They should then work to develop the following skills:</p> <ul style="list-style-type: none"> - selecting a desired instrument - Composing simple tunes using selected instruments - Recording simple tunes using one instrument - Recording voice or sounds using the microphone - Adding multiple instruments onto the same track. <p><i>- use technology purposefully to create, organise, store, manipulate and retrieve digital content.</i></p>

Internet Safety & Competence	Coding	Productivity	Creativity
<p>Google Internet Legends</p> <p>Following the Google Internet Legends scheme. Children in year 3 should cover the 'Be Internet Sharp' and 'Be Internet Alert' modules.</p> <p>In these modules, children will learn:</p> <ul style="list-style-type: none"> - How to protect their online reputation. - What a positive digital footprint is and how to maintain one for themselves. - The impact of sharing content online on their own life and the lives of others. - How to make sure that information they find online is reliable. - How to recognise online scams and protect themselves. <p><i>- 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.</i></p> <p><i>- use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content.</i></p> <p><i>- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</i></p>	<p>LightBot</p> <p>In year 3, children should decompose problems in order to decide the best way to solve them using the instructions available to them. They should develop the following skills:</p> <ul style="list-style-type: none"> - Decompose problems and create code to solve it. - debug lines of code (including their own) to find errors and correct them. - Use computational and logical thinking to discover the most efficient way of solving a problem. - Use loops to create a repeat specific commands needed to solve problems more efficiently. <p><i>- Design write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i></p> <p><i>- use sequence, selection and repetition in programs; work with variables and various forms of input and output</i></p> <p><i>- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i></p>	<p>Pages</p> <p>In year 3, children should develop the following skills in using Pages:</p> <ul style="list-style-type: none"> - Develop touch typing skills. Focus on both speed and accuracy (Can use WordBurst app to practise) - Use the cut, copy and paste tools to manipulate text in a document or add text in from another source (e.g. website) - Use the + tool to insert and edit tables to show various information - Use the paintbrush tool to edit the appearance of tables <p>Keynote</p> <p>In year 3, children should develop the following skills in using Keynote:</p> <ul style="list-style-type: none"> - Adding animation of objects and transitions between slides. - Editing background of slides - Presentation skills (talking about information presented on slides from memory rather than reading directly) <p>Numbers</p> <p>In year 3, children should develop the following skills in using Numbers:</p> <ul style="list-style-type: none"> - Create basic formulae to add or subtract values from selected cells - Use the "SUM" formula to total the values of selected cells - Use the "Autofill Cells" tool to efficiently copy formulae over a range of cells - Format and edit the appearance of charts created based on data in the spreadsheet <p><i>- select use and combine a variety of software to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing evaluating and presenting data and information.</i></p>	<p>Garage Band</p> <p>To begin with, children should be encouraged to explore the app and experiment with the different instruments, finding out what each sounds like and how they work.</p> <p>They should then work to develop the following skills:</p> <ul style="list-style-type: none"> - selecting a desired instrument - Composing simple tunes using selected instruments - Recording simple tunes using one instrument - Recording voice or sounds using the microphone - Adding multiple instruments onto the same track. <p><i>- use technology purposefully to create, organise, store, manipulate and retrieve digital content.</i></p>

Internet Safety & Competence	Coding	Productivity	Creativity
<p>Google Internet Legends Following the Google Internet Legends scheme. Children in year 4 should cover the 'Be Internet Secure' and 'Be Internet Kind' modules.</p> <p>In these modules, children will learn:</p> <ul style="list-style-type: none"> - Ways to develop safe habits online, including the importance of protecting personal information. - How to respect online privacy boundaries for themselves and others. - Ways to seek or ask for help if they or others feel unsafe online. - How to develop respectful, empathetic and healthy online relationships. - Ways to manage and respond in a healthy and safe way to hurtful online behaviour. <ul style="list-style-type: none"> - <i>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.</i> - <i>use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content.</i> - <i>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</i> 	<p>Swift Playgrounds In year 4, children should start to explore the Swift Playgrounds app and begin the Learn To Code 1 program. <u>It is not expected for all to complete this in year 4.</u></p> <p>During the course of Learn To Code 1, students will learn the following skills:</p> <ul style="list-style-type: none"> - Input a series of text based instructions to make complete codes - Use loops to repeat specific pieces of code - Combining pieces of code to create new functions in order to code more efficiently - Use conditional code to detect variables in order to decide when to start or end specific sections of code - Create algorithms to solve problems automatically <ul style="list-style-type: none"> - <i>Design write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i> - <i>use sequence, selection and repetition in programs; work with variables and various forms of input and output</i> - <i>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i> 	<p>Pages In year 4, children should develop the following skills in using Pages:</p> <ul style="list-style-type: none"> - Use the books templates to create e-books about a range of topics, using different layout styles to present information. - Use content from other sources (e.g. photos; tables and graphs created in Numbers; videos created in Clips or iMovie; etc.) - Edit photos added in using the paintbrush tool to crop, resize, adjust text wrapping and remove backgrounds using "Instant Alpha" <p>Keynote In year 4, children should develop the following skills in using Keynote:</p> <ul style="list-style-type: none"> - Use content from other sources (e.g. photos; tables and graphs created in Numbers; videos created in Clips or iMovie; etc.) - Adding presentation notes to their slides help with remembering information needed for presenting to the class/others. - Presentation skills (presenting clearly and confidently without reading directly from the slide (using presentation notes if needed). <p>Numbers In year 4, children should develop the following skills in using Numbers:</p> <ul style="list-style-type: none"> - Combine formulae across various slides to help collate and analyse data presented in a spreadsheet. - Use conditional formatting to automatically format cells dependent on results (e.g. below a certain value highlighted red) <p>- <i>select use and combine a variety of software to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing evaluating and presenting data and information.</i></p>	<p>Camera, Photos & iMovie In year 4, children should develop the following skills using the Camera and Photos apps:</p> <ul style="list-style-type: none"> - Capture video footage using the Camera app. - Capture slow motion footage using the Camera app. - Edit slow motion footage using the Photos app to adjust the start and end of slow motion effects. <p>children should develop the following skills using iMovie:</p> <ul style="list-style-type: none"> - Create new projects on iMovie and import selected media (videos and pictures). - Crop videos down to desired lengths and sections. - Split videos into multiple sections. - Add titles to videos. - Edit transitions between sections of video. - Record voice overs to add commentary to videos. - Change the volume of (and mute) selected sections of video. - Apply filters to section of video to change the appearance of the image. - Export finished movies to the Photos app for presentation. <p>- <i>use technology purposefully to create, organise, store, manipulate and retrieve digital content.</i></p>

Internet Safety & Competence	Coding	Productivity	Creativity
<p>Google Internet Legends Following the Google Internet Legends scheme. Children in year 5 should cover the 'Be Internet Sharp' and 'Be Internet Alert' modules.</p> <p>In these modules, children will learn:</p> <ul style="list-style-type: none"> - What having a positive digital footprint means. - Ways in which they can start to build a positive digital footprint. - How to be a critical consumer when online. - About different online scams, including what 'phishing' means. <p><i>- 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.</i></p> <p><i>- use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content.</i></p> <p><i>- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</i></p>	<p>Swift Playgrounds In year 5, children should continue to learn the Swift coding language through the Swift Playgrounds app. They should complete the Learn To Code 1 program and start Learn To Code 2.</p> <p>During the course of Learn To Code 2, students will learn the following skills:</p> <ul style="list-style-type: none"> - Use variables to decide when to start and end a program. - Use parameters to create a range of options within their code - Create and design world of different sizes and populate them with items and characters to interact with. - <i>Design write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i> - <i>use sequence, selection and repetition in programs; work with variables and various forms of input and output</i> - <i>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i> 	<p>Pages In year 5, children should have developed the required skills to use Pages to create documents to fit a range of different purposes across the curriculum</p> <p>Keynote In year 5, children should have developed the required skills to use Keynote to create presentations to fit a range of different purposes across the curriculum</p> <p>Numbers In year 5, children should have developed the required skills to use Numbers to create spreadsheets to fit a range of different purposes across the curriculum</p> <p><i>- select use and combine a variety of software to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing evaluating and presenting data and information.</i></p>	<p>Minecraft/ Tinkercad (Computer Aided Design) In year 5, students should use Minecraft and Tinkercad to create 3-dimensional models (link to DT work).</p> <p>Using Minecraft, children should be able to:</p> <ul style="list-style-type: none"> - Place a range of blocks to build simple structures. - Build complex structures using different blocks to represent different materials. - Create 3D models as a plan of DT projects to be created using real life materials. <p>Using Tinkercad, children should be able to:</p> <ul style="list-style-type: none"> - Place new items onto the workplane - Edit the size and shape of items on the workplane - Edit the appearance of items on the workplane (including colour and transparency) - Combine items to make simple and more complex structures on the workplane. - Create 3D models as a plan of DT projects to be created using real life materials. <p><i>- use technology purposefully to create, organise, store, manipulate and retrieve digital content.</i></p>

Internet Safety & Competence	Coding	Productivity	Creativity
<p>Google Internet Legends Following the Google Internet Legends scheme. Children in year 6 should cover the 'Be Internet Secure' and 'Be Internet Kind' modules.</p> <p>In these modules, children will learn:</p> <ul style="list-style-type: none"> - Ways to develop safe habits online, including the importance of protecting personal information. - How to respect online privacy boundaries for themselves and others. - Ways to seek or ask for help if they or others feel unsafe online. - How to develop respectful, empathetic and healthy online relationships. - Ways to manage and respond in a healthy and safe way to hurtful online behaviour. <ul style="list-style-type: none"> - <i>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.</i> - <i>use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content.</i> - <i>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</i> 	<p>Swift Playgrounds In year 6, children should be able to use coding in Swift Playgrounds to create their own programs to fit a range of purposes across the curriculum.</p> <ul style="list-style-type: none"> - <i>Design write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i> - <i>use sequence, selection and repetition in programs; work with variables and various forms of input and output</i> - <i>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i> 	<p>Pages In year 6, children should have developed the required skills to use Pages to create documents to fit a range of different purposes across the curriculum.</p> <p>Keynote In year 6, children should have developed the required skills to use Keynote to create presentations to fit a range of different purposes across the curriculum</p> <p>Numbers In year 6, children should have developed the required skills to use Numbers to create spreadsheets to fit a range of different purposes across the curriculum</p> <ul style="list-style-type: none"> - <i>select use and combine a variety of software to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing evaluating and presenting data and information.</i> 	<p>Creative Curriculum In year 6, students should combine creative skills from previous years across the curriculum in order to create varied projects. These should include:</p> <ul style="list-style-type: none"> - Art - Photography - Videography - Music - Computer Aided Design <ul style="list-style-type: none"> - <i>use technology purposefully to create, organise, store, manipulate and retrieve digital content.</i>