

**St Joseph's Catholic Primary School Long term plan for Computing 2020-2021**

<u><b>Year 1</b></u>		
<u><b>Autumn</b></u>	<u><b>Spring</b></u>	<u><b>Summer</b></u>
E-Safety Espresso Coding: Different sorts of input Digital Art: Colour Magic	E-Safety Typing and Formatting Using the internet/Espresso	E-Safety Espresso Coding: Buttons & Instructions Digital Images
<b><u>Sticky Knowledge (Knowledge to be retained)</u></b>		
To login safely To start to introduce to the children the idea of 'ownership' of their creative work. To start to add pictures and text to work. To emphasise the importance of following instructions. To emphasise the importance of following instructions. To be able to use the direction keys to complete the challenges successfully. To create a longer algorithm for an activity To contribute to a class pictogram. To understand what coding means in computing. To understand what coding means in computing.		
<b><u>Progression in skills and knowledge</u></b>		
<b>Algorithms</b>  <i>Pupils should be taught to understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</i>	<b>Create programs</b>  <i>Pupils should be taught to create and debug simple programs</i> <ul style="list-style-type: none"> <li>• write a simple program and test it</li> </ul>	<b>Reasoning</b>  <i>Pupils should be taught to use logical reasoning to predict the behaviour of simple programs</i> <ul style="list-style-type: none"> <li>• predict what the outcome of a simple program will be (logical reasoning).</li> </ul>

<ul style="list-style-type: none"> <li>understand that algorithms are used on digital devices</li> </ul>		
<p><b>Using technology</b></p> <p><i>Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content</i></p> <ul style="list-style-type: none"> <li>understand that programs require precise instructions</li> <li>organise, retrieve and manipulate digital content</li> </ul>	<p><b>Uses of IT beyond school</b></p> <p><i>Pupils should be taught to recognise common uses of information technology beyond school</i></p> <ul style="list-style-type: none"> <li>know how technology is used in school and outside of school</li> </ul>	<p><b>Safe use</b></p> <p><i>Pupils should be taught to 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> <ul style="list-style-type: none"> <li>know where to go for help if concerned.</li> </ul>
<p><b><u>Vocabulary</u></b></p>		
<p>Instructions; Buttons; Robots; Patterns; Program; Videos; Camera stills; Sounds; Image bank; Word bank; Space bar; Purpose; Online tools; Communicate; Photographs; Video; Sound; Data; Pictogram; Digitally</p>		
<p><b><u>Year 2</u></b></p>		
<p><b><u>Autumn</u></b></p> <p>E-Safety</p> <p>Espresso Coding: Different sorts of input</p> <p>Digital Art: Colour Magic</p>	<p><b><u>Spring</u></b></p> <p>E-Safety</p> <p>Typing and Formatting</p> <p>Using the internet/Espresso</p>	<p><b><u>Summer</u></b></p> <p>E-Safety</p> <p>Espresso Coding: Buttons &amp; Instructions</p> <p>Digital Images</p>
<p style="text-align: center;"><b><u>Sticky Knowledge (Knowledge to be retained)</u></b></p> <p>To understand the terminology associated with searching</p> <p>To gain a better understanding about searching on the Internet.</p> <p>To explore surrealism and Collage.</p> <p>To explore how a story can be presented in different ways.</p> <p>To make a presentation to the class.</p> <p>To understand what an algorithm is.</p> <p>To create a computer program using simple algorithms.</p> <p>To use the button object.</p>		

To understand the need to test and debug a program repeatedly.  
To debug simple programs.

**Progression in skills and knowledge**

**Algorithms**

*Pupils should be taught to understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions*

- understand that algorithms are used on digital devices

**Create programs**

*Pupils should be taught to create and debug simple programs*

- write a simple program and test it

**Reasoning**

*Pupils should be taught to use logical reasoning to predict the behaviour of simple programs*

- predict what the outcome of a simple program will be (logical reasoning).

**Using technology**

*Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content*

- understand that programs require precise instructions
- organise, retrieve and manipulate digital content

**Uses of IT beyond school**

*Pupils should be taught to recognise common uses of information technology beyond school*

- know how technology is used in school and outside of school

**Safe use**

*Pupils should be taught to 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*

- know where to go for help if concerned.

**Vocabulary**

Forward; Backward; Right-angle turn; Algorithm; Sequence; Debug; Predict; Paint effects; Templates; Animation; Documents; Index finger; ; typing; Enter/return; Caps lock; Backspace; Information sources; Communication; Purposes; Website content; Capturing moments; Magnified ; images; Questions; Data collection; Graphs; Charts; Save; Retrieve

<u>Year 3</u>			
<u>Autumn</u> E-Safety Using Word, Publisher and PowerPoint Coding: Sequence and Animation	<u>Spring</u> E-Safety Coding: Conditional Events Internet Research	<u>Summer</u> E-Safety Digital Graphs and Charts Computer Networks	
<b><u>Sticky Knowledge (Knowledge to be retained)</u></b>			
<p>To design algorithms using flowcharts.</p> <p>To use selection in coding with the 'if' command.</p> <p>To know what makes a safe password, how to keep passwords safe and the consequences of giving your passwords away.</p> <p>To discuss why PEGI restrictions exist.</p> <p>To introduce typing terminology.</p> <p>To understand the correct way to sit at the keyboard.</p> <p>To learn how to use the home, top and bottom row keys. To practice typing with the left and right hand.</p> <p>To use the symbols more than, less than and equal to, to compare values.</p> <p>To create a branching database of the children's choice.</p> <p>To consider what simulations are.</p>			
<b><u>Progression in skills and knowledge</u></b>			
<p><b>Create programs</b> <i>Pupils should be taught to 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> <ul style="list-style-type: none"> <li>write programs that accomplish specific goals</li> </ul>	<p><b>Develop programs</b> <i>Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output</i></p> <ul style="list-style-type: none"> <li>design a sequence of instructions, including directional instructions</li> </ul>	<p><b>Reasoning</b> <i>Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i></p> <ul style="list-style-type: none"> <li>discern when it is best to use technology and where it adds little or no value</li> </ul>	<p><b>Networks</b> <i>Pupils should be taught to 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> <ul style="list-style-type: none"> <li>navigate the web to complete simple searches</li> </ul>
<b>Search engines</b>	<b>Using programs</b>	<b>Safe use</b>	

<p><i>Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i></p> <ul style="list-style-type: none"> <li>• use a range of software for similar purposes</li> <li>• collect and present information</li> </ul>	<p><i>Pupils should be taught to 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</i></p> <ul style="list-style-type: none"> <li>• understand what computer networks do and how they provide multiple services</li> </ul>	<p><i>Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</i></p> <ul style="list-style-type: none"> <li>• use technology respectfully and responsibly</li> <li>• Know different ways they can get help, if concerned</li> </ul>	
<p><b><u>Vocabulary</u></b></p> <p>Sequence instructions; Sequence debugging; Test + improve; Logo commands; Sequence programming; Multimedia; Presentations; Alignment; Brush size; Repeats; Reflections; School network; Devices; Computer parts; Collaborate; Appropriate online; communication; Search tools; Appropriate websites; Owner; Questioning; Database; Construct; Contribute; Recording data; Data logger; Present data</p>			
<p><b><u>Year 4</u></b></p>			
<p><b><u>Autumn</u></b></p> <p>E-Safety</p> <p>Creating Presentations</p> <p>Coding – Introduction to Variables</p>	<p><b><u>Spring</u></b></p> <p>E-Safety</p> <p>Coding – Repetition and Loops</p> <p>Databases</p>	<p><b><u>Summer</u></b></p> <p>E-Safety</p> <p>Podcasts</p> <p>Coding</p>	
<p><b><u>Sticky Knowledge (Knowledge to be retained)</u></b></p> <p>To locate information on the search results page.</p> <p>To use flowcharts for design of algorithms including selection.</p> <p>To use the ‘repeat until’ with variables to determine the repeat.</p> <p>To think about different methods of communication.</p> <p>To identify appropriate behaviour when participating or contributing to collaborative online projects for learning.</p>			
<p><b><u>Progression in skills and knowledge</u></b></p>			
<p><b><u>Create programs</u></b></p> <p><i>Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by</i></p>	<p><b><u>Develop programs</u></b></p> <p><i>Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output</i></p>	<p><b><u>Reasoning</u></b></p> <p><i>Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i></p>	<p><b><u>Networks</u></b></p> <p><i>Pupils should be taught to understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the</i></p>

<p><i>decomposing them into smaller parts</i></p> <ul style="list-style-type: none"> <li>give an 'on-screen' robot specific instructions that takes them from A to B</li> </ul>	<ul style="list-style-type: none"> <li>experiment with variables to control models</li> </ul>	<ul style="list-style-type: none"> <li>make an accurate prediction and explain why they believe something will happen (linked to programming)</li> </ul>	<p><i>opportunities they offer for communication and collaboration</i></p>
<p><b>Search engines</b> <i>Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i></p> <ul style="list-style-type: none"> <li>select and use software to accomplish given goals</li> </ul>	<p><b>Using programs</b> <i>Pupils should be taught to 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</i></p> <ul style="list-style-type: none"> <li>produce and upload a podcast</li> </ul>	<p><b>Safe use</b> <i>Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</i></p> <ul style="list-style-type: none"> <li>recognise acceptable and unacceptable behaviour using technology</li> </ul>	
<p style="text-align: center;"><b><u>Vocabulary</u></b></p> <p>Type + edit logo commands; Sensors; Open-ended problems; Bugs in programs ; Complex programming; Creating + modifying; Specific purpose; Photo modifying; Keyboard shortcuts; Bullet points; Spell check; Constructive feedback; Different networks; Information collection; Reliability; Owners; Database creation; Database searches; Inaccurate data</p>			
<p style="text-align: center;"><b><u>Year 5</u></b></p>			
<p style="text-align: center;"><b><u>Autumn</u></b> E-Safety Coding – assign values, control, conditions Collect and Present Data</p>	<p style="text-align: center;"><b><u>Spring</u></b> E-Safety Design and Create Web Pages Coding – Random Numbers</p>	<p style="text-align: center;"><b><u>Summer</u></b> E-Safety Film Making Digital Pop Art Coding – Introduction to HTML</p>	
<p style="text-align: center;"><b><u>Sticky Knowledge (Knowledge to be retained)</u></b></p> <p>To explore string and text variable types so that the most appropriate can be used in programs. To gain a greater understanding of the impact that sharing digital content can have. To review sources of support when using technology and children's responsibility to one another in their online behaviour. To know how to maintain secure passwords. To learn about how to reference sources in their work. To create the game environment.</p>			

To create the game quest.  
 To understand the need for visual representation when generating and discussing complex ideas.

**Progression in skills and knowledge**

<p><b>Create programs</b>  <i>Pupils should be taught to 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> <ul style="list-style-type: none"> <li>• use technology to control an external device</li> </ul>	<p><b>Develop programs</b>  <i>Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output</i></p>	<p><b>Reasoning</b>  <i>Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i></p> <ul style="list-style-type: none"> <li>• design algorithms that use repetition and 2-way selection</li> <li>• analyse and evaluate information</li> </ul>	<p><b>Networks</b>  <i>Pupils should be taught to 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>
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<p><b>Search engines</b>  <i>Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i></p> <ul style="list-style-type: none"> <li>• understand how search results are selected and ranked</li> </ul>	<p><b>Using programs</b>  <i>Pupils should be taught to 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</i></p> <ul style="list-style-type: none"> <li>• combine sequences of instructions and procedures to turn devices on and off</li> </ul>	<p><b>Safe use</b>  <i>Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</i></p> <ul style="list-style-type: none"> <li>• understand that they have to make choices when using technology and that not everything is true and/or safe</li> </ul>
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**Vocabulary**

Explore procedures; Refine procedures; Variable; Hardware + software control; Change inputs; Different outputs; Articulate solutions; Commands; Online sharing; Multimedia effects; Multimedia modification; Transitions; Hyperlinks; Editing tools; Refining; Online sharing; Computing devices; Internet parts; Collaboration; Responsibility; Searching strategies; Webpages; Spreadsheets; Problem solving; Present answers; Analyse information  
 Question data; Interpret

<b><u>Year 6</u></b>			
<b><u>Autumn</u></b>	<b><u>Spring</u></b>		<b><u>Summer</u></b>
Research (David Hockney and Remembrance)	Coding – More Complex Variables Coding – Object Properties		Software for Party Planning
<b><u>Sticky Knowledge (Knowledge to be retained)</u></b>			
<p>To use the program design process, including flowcharts, to develop algorithms for more complex programs using and understanding of abstraction and decomposition to define the important aspects of the program.</p> <p>To gain a greater understanding of the impact that sharing digital content can have</p> <p>To create graphs showing the data collected.</p> <p>To type in a formula for a cell to automatically make a calculation in that cell.</p> <p>Using a spreadsheet to create computational models and answer questions.</p> <p>To code, test and debug from these designs.</p> <p>To learn about what the Internet consists of.</p> <p>To find out what a LAN and a WAN are.</p> <p>To research and find out about the age of the Internet.</p>			
<b>Progression in skills and knowledge</b>			
<b>Create programs</b> <i>Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</i>	<b>Develop programs</b> <i>Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output</i>	<b>Reasoning</b> <i>Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i>	<b>Networks</b> <i>Pupils should be taught to 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>
<b>Search engines</b> <i>Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i>	<b>Using programs</b> <i>Pupils should be taught to 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,</i>		<b>Safe use</b> <i>Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</i>



*evaluating and presenting data and information*

**Vocabulary**

Predicting outputs; Plan, program, test & review a program; Program writing; Control mimics + devices; Sensors; Measure input; Create; Variables; Link errors; Appropriate online tools; Audience; Atmosphere; Structure; Copyright; Information collection; HTML code; Different audiences; Research strategies; Search result rankings; Acknowledge resources; Generate; Process; Interpret; Store; Present information Plausibility; Appropriate data tool; Interrogate; Investigations