

Intent

'What a computer is to me is the most remarkable tool that we have ever come up with. It's the equivalent of a bicycle for our minds' Steve Jobs

At St Andrew's we aim to equip our children to use computational thinking and creativity to understand and change the world. To be digitally competent at a level suitable for the workplace and as active participants in the digital world.

We aim to grow computer savvy children who:

- Are skilled in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects.
- Are able to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.
- Have an understanding of the connected nature of devices.
- Have the ability to communicate ideas well by using applications and devices throughout the curriculum.
- Have the ability to collect, organise and manipulate data effectively.

Implementation

Our children should be able to work creatively to organise their knowledge, skills and understanding around the following key concepts:

- **To code**
- **To connect**
- **To communicate**
- **To collect**

These key concepts underpin learning through each Key Stages. This enables pupils to reinforce and build upon prior learning, make connections and develop subject specific language.

The accumulation of knowledge and skills from Years 1 to 6 is mapped as follows:

Breadth of Study in Computing	
Key Stage 1	Key Stage 2
<ul style="list-style-type: none"> • Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions. • Write and test simple programs. • Use logical reasoning to predict the behaviour of simple programs. • Organise, store, manipulate and retrieve data in a range of digital formats. • Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school. 	<ul style="list-style-type: none"> • Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • Use sequence, selections and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs. • Use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs. • 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. • Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely. • Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Key Concepts /Skills - Code		
This concept involves developing an understanding of instructions, logic and sequences..		
Years 1 and 2	Years 3 and 4	Years 5 and 6
Motion <ul style="list-style-type: none"> Control motion by specifying the number of steps to travel, direction and turn. 	Motion <ul style="list-style-type: none"> Use specified screen coordinates to control movement. 	Motion <ul style="list-style-type: none"> Set IF conditions for movements. Specify types of rotation giving the number of degrees.
Looks <ul style="list-style-type: none"> Add text strings, show and hide objects and change the features of an object. 	Looks <ul style="list-style-type: none"> Set the appearance of objects and create sequences of changes. 	Looks <ul style="list-style-type: none"> Change the position of objects between screen layers (send to back, bring to front).
Sound <ul style="list-style-type: none"> Select sounds and control when they are heard, their duration and volume. 	Sound <ul style="list-style-type: none"> Create and edit sounds. Control when they are heard, their volume, duration and rests. 	Sound <ul style="list-style-type: none"> Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.
Draw <ul style="list-style-type: none"> Control when drawings appear and set the pen colour, size and shape. 	Draw <ul style="list-style-type: none"> Control the shade of pens. 	Draw <ul style="list-style-type: none"> Combine the use of pens with movement to create interesting effects.
Events <ul style="list-style-type: none"> Specify user inputs (such as clicks) to control events. 	Events <ul style="list-style-type: none"> Specify conditions to trigger events. 	Events <ul style="list-style-type: none"> Set events to control other events by 'broadcasting' information as a trigger.
Control <ul style="list-style-type: none"> Specify the nature of events (such as a single event or a loop). 	Control <ul style="list-style-type: none"> Use IF THEN conditions to control events or objects. 	Control <ul style="list-style-type: none"> Use IF THEN ELSE conditions to control events or objects.
Sensing <ul style="list-style-type: none"> Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?). 	Sensing <ul style="list-style-type: none"> Create conditions for actions by sensing proximity or by waiting for a user input (such 	Sensing <ul style="list-style-type: none"> Use a range of sensing tools (including proximity, user inputs, loudness and

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	as proximity to a specified colour or a line or responses to questions).	mouse position) to control events or actions.
Variables and lists From Year 3	Variables and lists <ul style="list-style-type: none"> • Use variables to store a value. • Use the functions define, set, change, show and hide to control the variables. 	Variables and lists <ul style="list-style-type: none"> • Use lists to create a set of variables.
Operators From Year 3	Operators <ul style="list-style-type: none"> • Use the Reporter operators () + () () - () () * () () / () to perform calculations. 	Operators <ul style="list-style-type: none"> • Use the Boolean operators () < (), () = (), () > (), () and (), () or (), Not () to define conditions. • Use the Reporter operators () + (), () - (), () * (), () / () to perform calculations. Pick Random () to () Join () () Letter () of () Length of () () Mod () This reports the remainder after a division calculation Round () () of ().
Key Concepts /Skills - Connect This concept involves developing an understanding of how to safely connect with others.		
Years 1 and 2	Years 3 and 4	Years 5 and 6
<ul style="list-style-type: none"> • Participate in class social media accounts. • Understand online risks and the age rules for site. 	<ul style="list-style-type: none"> • Contribute to blogs that are moderated by teachers. • Give examples of the risks posed by online communications. • Understand the term 'copyright'. 	<ul style="list-style-type: none"> • Choose the most suitable applications and collaborate with others online on sites approved and moderated by teachers. • Give examples of the risks of online communities and demonstrate knowledge

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	<ul style="list-style-type: none"> • Understand that comments made online that are hurtful or offensive are the same as bullying. • Understand how online services work. 	<p>of how to minimise risk and report problems.</p> <ul style="list-style-type: none"> • Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder. • Understand the effect of online comments and show responsibility and sensitivity when online. • Understand how simple networks are set up and used.
<p>Key Concepts /Skills - Communicate This concept involves using apps to communicate one's ideas</p>		
<p>Years 1 and 2</p>	<p>Years 3 and 4</p>	<p>Years 5 and 6</p>
<p>Use a range of applications and devices in order to communicate ideas, work and messages.</p>	<ul style="list-style-type: none"> • Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally. 	<ul style="list-style-type: none"> • Choose the most suitable applications and devices for the purposes of communication. • Use many of the advanced features in order to create high quality, professional or efficient communications.
<p>Key Concepts /Skills - Collect This concept involves developing an understanding of databases and their uses.</p>		
<p>Years 1 and 2</p>	<p>Years 3 and 4</p>	<p>Years 5 and 6</p>
<ul style="list-style-type: none"> • Use simple databases to record information in areas across the curriculum. 	<ul style="list-style-type: none"> • Devise and construct databases using applications designed for this purpose in areas across the curriculum. 	<ul style="list-style-type: none"> • Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner.