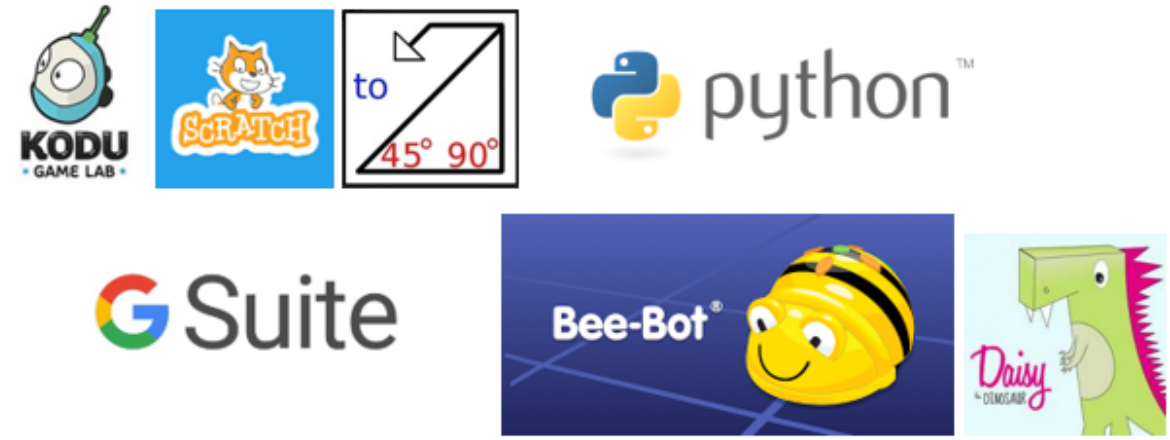
Computing



The computing curriculum at St Aidan's empowers and enables children to be producers of digital content across a wide range of tools. We use the National Centre for Computing Education (NCCE)'s Teach Computing Curriculum.

Our programme of study builds up children's skills and knowledge starting with EYFS where children are encouraged to use whiteboards to touch screen and explore materials around them. They are taught to explore with a range of materials creatively to design and make products and use drawing and painting to develop and share their ideas and imagination. Children are supported to develop a wide range of art and design techniques in using colour, form and space. Children are supported to verbally describe a preference for a particular practise by being encouraged to explore a variety of practises and begin to spot the differences between each with support. Children begin to explore algorithm by using Bee-Bots and playing games such as Simon says to move around in an organised order to help develop this understanding physical awareness necessary for understanding algorithms and sequences.

The programme of study continues through unplugged, or iPad App activities to write simple sets of instructions in Year 1 through to writing more complex interactions, for example, using HTML or Python code in Year 6. The children work to plan their products, execute and debug their code or digital productions and are encouraged to help one another to problem solve. In Computing we see collaboration as a key skill that increases creativity.

Spiral curriculum

The units for key stages 1 and 2 are based on a spiral curriculum. This means that each of the themes is revisited regularly (at least once in each year group), and pupils revisit each theme through a new unit that consolidates and builds on prior learning within that theme. This style of curriculum design reduces the amount of knowledge lost through forgetting, as topics are revisited yearly. It also ensures that connections are made even if different teachers are teaching the units within a theme in consecutive years.

Physical computing The Teach Computing Curriculum acknowledges that physical computing plays an important role in modern pedagogical approaches in computing, both as a tool to engage pupils and as a strategy to develop pupils' understanding in more creative ways. Additionally, physical computing supports and engages a diverse range of pupils in tangible and challenging tasks. The physical computing units in our Curriculum are:

■ Year 5 – Selection in physical computing, which uses a Crumble controller

■ Year 6 – Sensing movement, which uses a micro:bit

Online safety: The unit overviews for each unit show the links between the content of the lessons and the National Curriculum and Education for a Connected World framework (ncce.io/efacw). These references show where aspects relating to online safety, or digital citizenship, are covered within our Curriculum.

Inclusive and ambitious: Our Curriculum supports all pupils. Each lesson is sequenced so that it builds on the learning from the previous lesson, and where appropriate, activities are scaffolded so that all pupils can succeed and thrive. Scaffolded activities provide pupils with extra resources, such as visual prompts, to reach the same learning goals as the rest of the class. Exploratory tasks foster a deeper understanding of a concept, encouraging pupils to apply their learning in different contexts and make connections with other learning experiences. As well as scaffolded activities, embedded within the lessons are a range of pedagogical strategies, which support making computing topics more accessible.

We use free tools that are available in the public domain such as MSW Logo and Kodu but we also give the children access to robotics equipment and work with the secondary schools to extend children that have a natural aptitude for logical working. This additional robotics work is available to small groups from Year 4-6.

In Basic Skills, from KS2, children use G-Suite to create a range of documents including word processing, data gathering and presentations. They also use APPs on the iPads to create presentations on tools like Book Creator. Children produce six high quality pieces of writing per year, on the computer.

We ensure that all three strands of the national curriculum are met and children from Years 3-6 visit the ICT room regularly as well as having access to iPads for classroom research.

Learning Computing in EYFS at St Aidan's

The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas.

This document demonstrates which statements from the 2020 Development Matters are skills that are being taught at school for computing within the national curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for computing.

The most relevant statements for computing are taken from the following areas of learning:

- Personal, Social and Emotional Development
- Physical Development
- Understanding the World
- Expressive Arts and Design

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The EYFS Framework is split into areas rather than subjects; the Early Learning Goals most relevant to Computing are as follows:

Personal, Social and Emotional Development - Remember rules without needing an adult to remind them - Show resilience and perseverance in the face of a challenge - Know and talk about the different factors that support their overall health and wellbeing:
- sensible amounts of ‘screen time’.

Physical Development - Match their developing physical skills to tasks and activities in the setting.
Understanding the World - Explore how things work - Develop their small motor skills so that they can use a range of
tools competently, safely and confidently.

Expressive Arts and Design - Explore, use and refine a variety of artistic effects to express their ideas and feelings.

Personal, Social and Emotional Development - Managing Self - Be confident to try new activities and show independence,
resilience and perseverance in the face of challenge - Explain the reasons for rules, know right from wrong and try to behave accordingly.

Expressive Arts and Design - Creating with Materials - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Curriculum Map - KS1 & KS2

	Autumn term	Spring term	Summer term
Year 1	**Computing system and networks** **Creating media- digital painting**	**Programming A- Moving a robot** **Data and information – Group data**	**Creating media –** Digital writing **Programming B-** Programming Animations
	Use a keyboard to write one sentence. Log in and out of Windows Locate a programme on the desktop Discuss how technology is used in our homes		
Year 2	**Computing systems and networks-** IT around us **Creating media-** Digital photography	**Programming A- Robot Algorithms** **Data and information- pictograms**	**Creating media-** digital music **Programming B-** Programming quizzes
	Use a keyboard to write three sentences. Open a file from Google Classoom (intro to G Suite) Discuss how technology is used in shops and industry		
Year 3	**Computing systems and networks-** connecting computers **Creating media- stop-frame animation**	**Programming A- sequencing sounds** **Data and information- Branching databases**	**Creating media- desktop publishing** **Programming B- Events and actions in programs**
	Simple search and discuss results Create written documents including images and subtitles Use presentation software Create a survey and present results		

Year 4	**Computing systems and networks- the internet .Creating media- Audio production**	**Programming A- Repetition in shapes Data and information- Data logging**	**Creating media- photo editing Programming B- repetition in games**
	Know some results from a search are adverts Be able to refine search terms to get more specific Create written documents including images and subtitles Use presentation software Create a survey and present results		
Year 5	**Computing systems and networks- systems and searching Creating media- video production**	**Programming A- Selection in physical computing Data and information- Flat file databases**	**Creating media- introduction to vector graphics Programming B- Selection in quizzes**
	Make judgements about the quality of the resulting article Embed a table in a written document and use styles for headings and subheadings Use presentation software Create a survey and present results		
Year 6	**Computing systems and networks- Communication and collaboration Creating media- web page creation**	**Programming A- variables in games Data and information- introduction to spreadsheets**	**Creating media- 3d Modelling Programming B- sensing movement**
	Make judgements about the quality of the resulting article Embed links in a document Use presentation software Create a survey and present results		

Additional Content

There are many aspects of computer science not covered in the National Curriculum. Single sessions throughout Key Stage 2 are used to look at some of these topics as part of an enhanced curriculum.

Possible topics include encoding and compressing media (text, images, video, sound), computer hardware - how a computer works, cloud computing, encryption, artificial intelligence, robotics, future of computing, history of computing, common algorithms (eg: sorting).