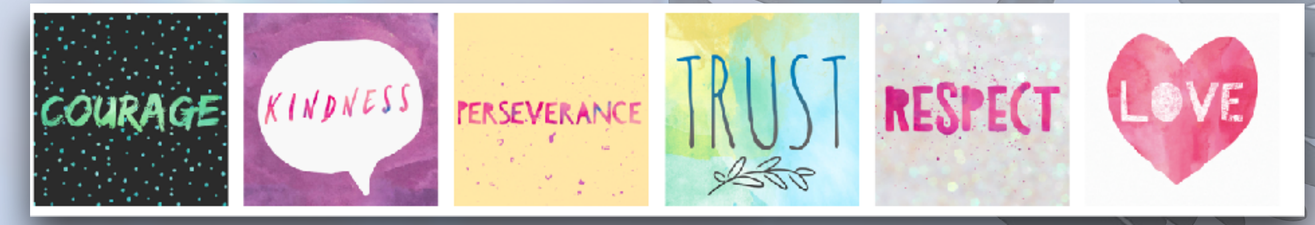
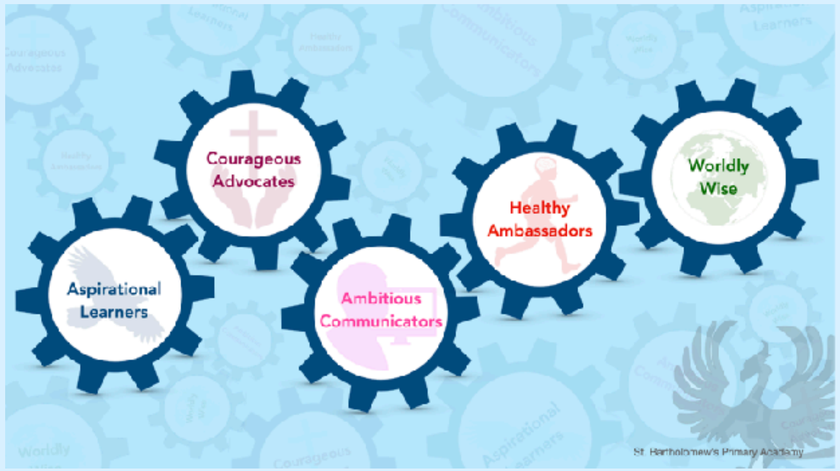
Computing Flight Path

Hand in hand we learn, we grow, we soar

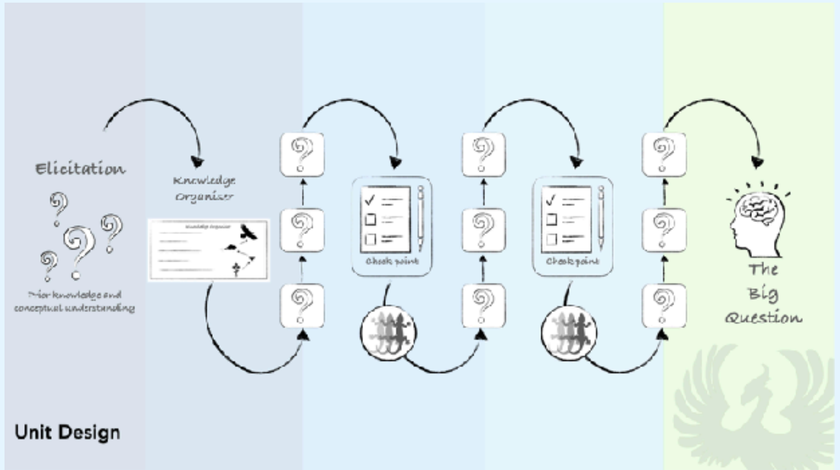


Our Curriculum Drivers



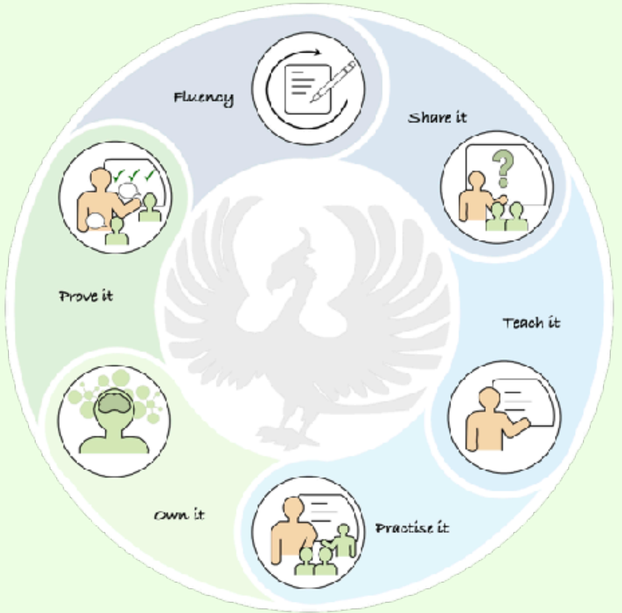
These articulate the ambition of our curriculum and how it will enable children to be confident, successful and ambitious citizens, prepared for life outside of school.

Our Unit Design



These are the principles that teachers adhere to when designing a unit of work, to ensure it builds upon prior learning and leads to secure schema.

Our Lesson Design



This is the structure we follow during lessons to reduce cognitive load and ensure all children are able to succeed.

At St. Bartholomew's we use the SAMR model to enable us to reflect upon how and when we use technology to maximum effect.

SAMR model

Dr Ruben Puentedura

ENHANCEMENT

SUBSTITUTION

Tech acts as a direct tool substitute with no functional change.

AUGMENTATION

Tech acts as a direct tool with functional improvement.

TRANSFORMATION

MODIFICATION

Tech allows for significant task redefinition.

REDEFINITION

Tech allows for the creation of new tasks previously inconceivable.

Intent

Our Computing curriculum equips children to express themselves through technology in a rich and developing digital world.

We aim to develop children's computational thinking skills, knowledge of computer science concepts and application of digital literacy skills. Our children use information technology to create digital content that enables them to express themselves and develop their ideas as active participants in a digital world.

We recognise that technology can allow pupils to share their learning in creative ways. We also understand the accessibility opportunities technology can provide for our pupils.

We are committed to preparing pupils to live safely in an increasingly digital society empowering them to become digitally confident in their daily lives, preparing them to become independent users of technology beyond the curriculum.

Implementation

St Bart's is a technology rich environment with television screens in corridors throughout the school. This enables us to showcase and celebrate children's learning, achievements and events via Trilby TV. The use of educational apps including Tapestry, Showbie and Boom Reader allow clear communication between school and our families to share photographs, home learning children's reading journeys.

At St Bart's, iPads are available for children to use across the school. We have bank of shared devices in EYFS and KS1, 1 device between 2 children in Year 3/4 and when children reach Year 5/6, each child has access to their own device. The use of this technology throughout the school results in children learning skills that they can apply both in and outside of school.

We strive to integrate technology seamlessly by thinking about a few key questions:

- How can my lesson be improved using technology?
- How can the children's learning be maximised by using technology?
- How can I engage and empower students through technology?

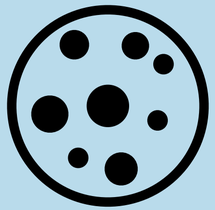
We have aspire to a computing curriculum that creates opportunities for skills to be applied across a wider range of subjects, giving pupils ample opportunities to practise and refine their skills.
At St Bart's our computing curriculum has been created using a combination of resources from the 'Teach Computing' programme (https://teachcomputing.org/curriculum) and 'Barefoot computing' (https://www.barefootcomputing.org/curriculum) in EYFS as well as Apple's Everyone Can Create and Swift Playground to support the computing curriculum we deliver. This ensures that there is a progression of knowledge and skills that the children can build on each year within the computer science aspects of the curriculum. We also use SCARF (https://coramlifeeducation.org.uk/) and Project Evolve (https://projectevolve.co.uk/) to ensure full coverage of the e-safety aspects of the curriculum.

Impact

By the end of KS2, Children at St Bart's will have highly developed transferable knowledge, skills and understanding across our key and secondary concepts of learning. Children across the school show high levels of originality, imagination, creativity and innovation in their understanding and application of skills in computing across a variety of subject areas. For example, when answering big questions at the end of topics, there is evidence of technology being used to redefine learning tasks (SAMR model). These pieces of work will be shared via Trilby TV for others to celebrate and learn from.

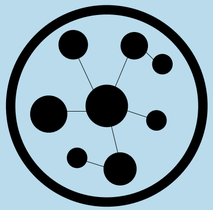
We use a variety of strategies to evaluate the knowledge, skills and understanding that our children have gained in each unit:

- CPD to ensure that teacher pedagogy and assessment is secure
- Apple Teacher - RTC training sessions
- regular feedback, marking and pupil voice feedback
- subject monitoring
- regular low stakes knowledge assessments, using a range of creative approaches



Information

Isolated facts that can have no organisational basis or links

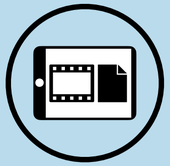


Schema

Knowledge organised in a meaningful way - memories (emotional), concepts, knowledge

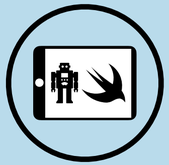
Key Concepts (Big Ideas)

Key concepts identify the content or focus areas of study



Creating media: (design and development, communicating and collaborating online, presenting, creating content)

Data and information: (collecting, analysing, evaluating, presenting data and information)



Programming: (interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors)

Systems and networks: (systems, networks and how they are used, the internet, hardware and software)

Staying safe: Evaluating online content, using all elements of technology in a safe, respectful and responsible manner.

Second Order Concepts

'The kinds of questions we ask in Computing'

Second-order concepts: these shape the key questions asked in a subject and organise the subject knowledge.

Cause and consequence

How can I debug this code to make it work?
How does this code affect the performance of the sprite?

Responsibility

Do I trust this source?
Am I respectful of age restrictions?
How can I get help if something online feels unsafe?
Do I consider the risks before using technology?
Do I understand the impact of my digital footprint?
When is the right time to use technology?

Written and oral expression

How can technology improve my ability to communicate?
Would recording my voice help me to express myself?
Is creating a video the best way of demonstrating my learning?

Similarity and difference

Are there any patterns in this data?
What can I conclude from my findings?

Purpose

Who is the target audience?
What can this media be used for?
How can I present my ideas effectively?

National Curriculum

Key stage 1

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
- **create** and **debug** simple programs
- use **logical reasoning** to **predict** the **behaviour** of simple programs
- **use technology purposefully** to create, organise, store, manipulate and retrieve digital content
- **recognise common uses** of information technology beyond school
- **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.

Key stage 2

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
- use **sequence**, **selection**, and r**epetition** in programs; work with **variables** and various forms of **input and output**
- use **logical reasoning** to explain how some simple algorithms work and to **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
- **use search technologies** effectively, appreciate how results are selected and ranked, and **be discerning** in evaluating digital content
- **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**
- **use technology safely**, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to **report concerns** about content and contact.

Computing Curriculum Overview

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Term 1	Busy Bodies - Barefoot Computing - Unplugged instruction following and giving	Computing systems and networks Teach Computing: Technology around us	Computer systems and networks Teach Computing: IT around us	Computing systems and networks Teach Computing: Connecting computers	Computing systems and networks Teach Computing: The Internet	Computer systems and networks Teach Computing: Systems and searching	Computer systems and networks Teach Computing: Communication and collaboration
Term 2	Creating Media Everyone can create photography Chapter 1 Everyday objects activities 1 and 2	Creating media Everyone can create photography Chapter 1 Everyday objects activity 3	Creating media Everyone can create photography Chapter 2 Portraits Activity 1 and 2	Creating media Everyone can create photography Chapter 2 Portraits Activity 3	Creating media Everyone can create photography Chapter 3 Scenes	Creating media Everyone can create photography Chapter 5 Collage composition	Creating media Everyone can create photography Chapter 7 animated gifs
Term 3	Programming A Bee-Bot programming	Programming A Swift Playground Learn to Code 1 - Commands	Programming A Swift Playground Learn to Code 1 - Functions	Programming A Swift Playground Learn to Code 1 - Loops	Programming A Swift Playground Learn to Code 1 - Logical Operators	Programming A Swift Playground Learn to Code 2 - Variables	Programming A Swift Playground Learn to Code 2 - Types
Term 4	Data and Information Everyone can create drawing Chapter 1 Activity 2: Lines and patterns	Data and information Everyone can create drawing Chapter 8 Infographics Grouping data	Data and information Everyone can create drawing Chapter 8 Infographics Pictograms	Data and information Teach Computing Branching databases	Data and information Teach Computing Data logging - sensors	Data and information Teach Computing Flat-file databases	Data and information Teach Computing Introduction to Spreadsheets
Term 5	Creating Media Type my name using a keyboard and start to use a mouse	Creating media Teach Computing Digital writing - Typing skills	Creating media Digital music Teach Computing/ Chrome Music Lab	Creating media Everyone Can Create Photo: Chapter 7 Activity 2 Stop motion animation	Creating media Everyone Can Create Video - Chapter 1 Your First Movie using Clips	Creating Media Everyone Can Create Video Chapter 4 Tutorials	Creating Media Everyone Can Create Video Chapter 5 Documentaries
Term 6	Programming B Initial Swift Playground levels (modelled)	Programming B Teach Computing Programming animations using Scratch Jr	Programming B Teach Computing Programming quizzes using Scratch Jr	Programming B Swift Playground Learn to Code 1 - Conditional Code	Programming B Swift Playground Learn to Code 1 - While Loops	Programme B Programming using Spheros	Programming B Programming using Spheros

Barefoot Computing at School

Teach Computing

Staying Safe Curriculum Overview

Our e-safety curriculum is based upon the DSAT Safeguarding Curriculum and the eight areas set out by The UK Safer Internet Council's 'Education for a Connected World'. We use a combination of resources from Project Evolve and SCARF (taught during PSHE lessons).

	Project Evolve Strands	**SCARF units** (PSHE lessons) and additional opportunities*
Term 1	**Self-image and Identity**	**Me and My Relationships**
Term 2	**Online Relationships** **Online Bullying**	
Term 3	**Health, Well-being and Lifestyle**	**Keeping Myself Safe** Safer Internet Day - Staying Safe Initiative
Term 4	**Managing Online Information**	**Rights and Respect**
Term 5	**Privacy and Security** **Copyright and Ownership**	
Term 6	**Online Reputation**	

PROJECT EVOLVE

SCARF

EYFS	Computing	Staying Safe (Project Evolve)
Term 1	**Busy Bodies - Barefoot Computing** **Unplugged instruction following and giving** https://www.barefootcomputing.org/earlyyears	**Self-image and identity** https://projectevolve.co.uk/toolkit/resources/years/early-years-7/self-image-and-identity/
Term 2	**Creating media** **Everyone can create photography Chapter 1 Everyday objects activity 3**	**Online relationships** https://projectevolve.co.uk/toolkit/resources/years/early-years-7/online-relationships/ **Online Bullying** https://projectevolve.co.uk/toolkit/resources/years/early-years-7/online-bullying/
Term 3	**Programming A** **Bee-Bot programming**	**Health, Wellbeing and Lifestyle** https://projectevolve.co.uk/toolkit/resources/years/early-years-7/health-well-being-and-lifestyle/
Term 4	Data and Information **Everyone can create drawing Chapter 1 Activity 2: Lines and patterns**	**Managing Online Information** https://projectevolve.co.uk/toolkit/resources/years/early-years-7/managing-online-information/
Term 5	**Creating Media** **Type my name using a keyboard and start to use a mouse**	**Privacy and Security** https://projectevolve.co.uk/toolkit/resources/years/early-years-7/privacy-and-security/ **Copyright and Ownership** https://projectevolve.co.uk/toolkit/resources/years/early-years-7/copyright-and-ownership/
Term 6	**Programming B** **Initial Swift Playground levels (modelled)**	**Online reputation** https://projectevolve.co.uk/toolkit/resources/years/early-years-7/online-reputation/

Year 1	Computing	Staying Safe (Project Evolve)
Term 1	**Computing systems and networks** **Teach Computing: Technology around us** https://teachcomputing.org/curriculum/key-stage-1/computing-systems-and-networks-technology-around-us	**Self-image and identity** https://projectevolve.co.uk/toolkit/resources/years/year-one/self-image-and-identity/
Term 2	**Creating Media** **Everyone can create photography Chapter 1 Everyday objects activities 1 and 2**	**Online relationships** https://projectevolve.co.uk/toolkit/resources/years/year-one/online-relationships/ **Online Bullying** https://projectevolve.co.uk/toolkit/resources/years/year-one/online-bullying/
Term 3	**Programming A** **Swift Playground Learn to Code 1 - Commands**	**Health, Wellbeing and Lifestyle** https://projectevolve.co.uk/toolkit/resources/years/year-one/health-well-being-and-lifestyle/
Term 4	**Data and information** **Everyone can create drawing Chapter 8 Infographics** Grouping data	**Managing Online Information** https://projectevolve.co.uk/toolkit/resources/years/year-one/managing-online-information/
Term 5	**Creating media** **Digital writing Teach Computing - Typing skills** https://teachcomputing.org/curriculum/key-stage-1/creating-media-digital-writing	**Privacy and Security** https://projectevolve.co.uk/toolkit/resources/years/year-one/privacy-and-security/ **Copyright and Ownership** https://projectevolve.co.uk/toolkit/resources/years/year-one/copyright-and-ownership/
Term 6	**Programming B** **Teach Computing - Programming animations using Scratch Jr** https://teachcomputing.org/curriculum/key-stage-1/programming-b-introduction-to-animation	**Online reputation** https://projectevolve.co.uk/toolkit/resources/years/year-one/online-reputation/

Year 2	Computing	Staying Safe (Project Evolve)
Term 1	**Computer systems and networks - Teach Computing: IT around us** https://teachcomputing.org/curriculum/key-stage-1/computing-systems-and-networks-it-around-us	**Self-image and identity** https://projectevolve.co.uk/toolkit/resources/years/year-two/self-image-and-identity/
Term 2	**Creating media** **Everyone can create photography Chapter 1 Everyday objects activity 3**	**Online relationships** https://projectevolve.co.uk/toolkit/resources/years/year-two/online-relationships/ **Online Bullying** https://projectevolve.co.uk/toolkit/resources/years/year-two/online-bullying/
Term 3	**Programming A** **Swift Playground Learn to Code 1 - Functions**	**Health, Wellbeing and Lifestyle** https://projectevolve.co.uk/toolkit/resources/years/year-two/health-well-being-and-lifestyle/
Term 4	**Data and information** **Everyone can create drawing Chapter 8 Infographics** Pictograms	**Managing Online Information** https://projectevolve.co.uk/toolkit/resources/years/year-two/managing-online-information/
Term 5	**Creating media** **Digital music Teach Computing/ Chrome Music Lab** https://teachcomputing.org/curriculum/key-stage-1/creating-media-making-music https://musiclab.chromeexperiments.com/	**Privacy and Security** https://projectevolve.co.uk/toolkit/resources/years/year-two/privacy-and-security/ **Copyright and Ownership** https://projectevolve.co.uk/toolkit/resources/years/year-two/copyright-and-ownership/
Term 6	**Programming B** **Teach Computing Programming quizzes using Scratch Jr** https://teachcomputing.org/curriculum/key-stage-1/programming-b-an-introduction-to-quizzes	**Online reputation** https://projectevolve.co.uk/toolkit/resources/years/year-two/online-reputation/

Year 3	Computing	Staying Safe (Project Evolve)
Term 1	**Computing systems and networks** **Teach Computing: Connecting computers** https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-connecting-computers	**Self-image and identity** https://projectevolve.co.uk/toolkit/resources/years/year-three/self-image-and-identity/
Term 2	**Creating media** **Everyone can create photography Chapter 2 Portraits Activity 3**	**Online relationships** https://projectevolve.co.uk/toolkit/resources/years/year-three/online-relationships/ **Online Bullying** https://projectevolve.co.uk/toolkit/resources/years/year-three/online-bullying/
Term 3	**Programming A** **Swift Playground Learn to Code 1 - Loops**	**Health, Wellbeing and Lifestyle** https://projectevolve.co.uk/toolkit/resources/years/year-three/health-well-being-and-lifestyle/
Term 4	**Data and information** **Teach Computing - Branching databases** https://teachcomputing.org/curriculum/key-stage-2/data-and-information-branching-databases	**Managing Online Information** https://projectevolve.co.uk/toolkit/resources/years/year-three/managing-online-information/
Term 5	**Creating media** **Everyone Can Create Photo: Chapter 7 Activity 2 Stop motion animation**	**Privacy and Security** https://projectevolve.co.uk/toolkit/resources/years/year-three/privacy-and-security/ **Copyright and Ownership** https://projectevolve.co.uk/toolkit/resources/years/year-three/copyright-and-ownership/
Term 6	**Programming B** **Swift Playground Learn to Code 1 - Conditional Code**	**Online reputation** https://projectevolve.co.uk/toolkit/resources/years/year-three/online-reputation/

Year 4	Computing	Staying Safe (Project Evolve)
Term 1	**Computing systems and networks** **Teach Computing: The Internet** https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-the-internet	**Self-image and identity** https://projectevolve.co.uk/toolkit/resources/years/4/self-image-and-identity/
Term 2	**Creating media** **Everyone can create photography Chapter 3 Scenes**	**Online relationships** https://projectevolve.co.uk/toolkit/resources/years/4/online-relationships/ **Online Bullying** https://projectevolve.co.uk/toolkit/resources/years/4/online-bullying/
Term 3	**Programming A** **Swift Playground Learn to Code 1 - Logical Operators**	**Health, Wellbeing and Lifestyle** https://projectevolve.co.uk/toolkit/resources/years/4/health-well-being-and-lifestyle/
Term 4	**Data and information** **Teach Computing - Data logging - Sensors** https://teachcomputing.org/curriculum/key-stage-2/data-and-information-data-logging	**Managing Online Information** https://projectevolve.co.uk/toolkit/resources/years/4/managing-online-information/
Term 5	**Creating media** **Everyone Can Create Video - Chapter 1 Your First Movie using Clips**	**Privacy and Security** https://projectevolve.co.uk/toolkit/resources/years/4/privacy-and-security/ **Copyright and Ownership** https://projectevolve.co.uk/toolkit/resources/years/4/copyright-and-ownership/
Term 6	**Programming B** **Swift Playground Learn to Code 1 - While Loops**	**Online reputation** https://projectevolve.co.uk/toolkit/resources/years/4/online-reputation/

Year 5	Computing	Staying Safe (Project Evolve)
Term 1	**Computer systems and networks** **Teach Computing: Systems and searching** https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-sharing-information	**Self-image and identity** https://projectevolve.co.uk/toolkit/resources/years/5/self-image-and-identity/
Term 2	**Creating media** **Everyone can create photography Chapter 5 Collage composition**	**Online relationships** https://projectevolve.co.uk/toolkit/resources/years/5/online-relationships/ **Online Bullying** https://projectevolve.co.uk/toolkit/resources/years/5/online-bullying/
Term 3	**Programming A** **Swift Playground Learn to Code 2 - Variables**	**Health, Wellbeing and Lifestyle** https://projectevolve.co.uk/toolkit/resources/years/5/health-well-being-and-lifestyle/
Term 4	**Data and information** **Teach Computing - Flat-file databases** https://teachcomputing.org/curriculum/key-stage-2/data-and-information-flat-file-databases	**Managing Online Information** https://projectevolve.co.uk/toolkit/resources/years/5/managing-online-information/
Term 5	**Creating Media** **Everyone Can Create Video Chapter 4 Tutorials**	**Privacy and Security** https://projectevolve.co.uk/toolkit/resources/years/5/privacy-and-security/ **Copyright and Ownership** https://projectevolve.co.uk/toolkit/resources/years/5/copyright-and-ownership/
Term 6	**Programme B** **Programming using Spheros**	**Online reputation** https://projectevolve.co.uk/toolkit/resources/years/5/online-reputation/

Year 6	Computing	Staying Safe (Project Evolve)
Term 1	**Computer systems and networks** **Teach Computing: Communication and collaboration** https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-communication	**Self-image and identity** https://projectevolve.co.uk/toolkit/resources/years/6/self-image-and-identity/
Term 2	**Creating media** **Everyone can create photography Chapter 7 animated gifs**	**Online relationships** https://projectevolve.co.uk/toolkit/resources/years/6/online-relationships/ **Online Bullying** https://projectevolve.co.uk/toolkit/resources/years/6/online-bullying/
Term 3	**Programming A** **Swift Playground Learn to Code 2 - Types**	**Health, Wellbeing and Lifestyle** https://projectevolve.co.uk/toolkit/resources/years/6/health-well-being-and-lifestyle/
Term 4	**Data and information** **Teach Computing Introduction to Spreadsheets** https://teachcomputing.org/curriculum/key-stage-2/data-and-information-spreadsheets	**Managing Online Information** https://projectevolve.co.uk/toolkit/resources/years/6/managing-online-information/
Term 5	**Creating Media** **Everyone Can Create Video Chapter 5 Documentaries**	**Privacy and Security** https://projectevolve.co.uk/toolkit/resources/years/6/privacy-and-security/ **Copyright and Ownership** https://projectevolve.co.uk/toolkit/resources/years/6/copyright-and-ownership/
Term 6	**Programme B** **Programming using Spheros**	**Online reputation** https://projectevolve.co.uk/toolkit/resources/years/6/online-reputation/

Computing passports

Computing passports indicate the basic skills and knowledge that every child should have by the time they reach the end of each year group at St Bart's. There are goals relating to each of the key concepts.


Creating Media


Data and Information

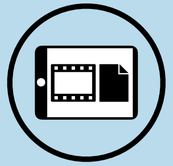

Programming


Systems and Networks

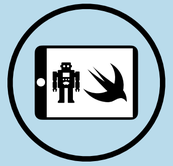

Staying Safe

Computing passport

EYFS


I can take a photograph


I can sort physical objects

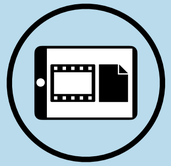

I can program a Beebot to move


I can name some technology devices (eg. iPad, computer, mouse)


I know I need to use the internet with an adult

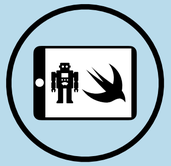
Computing passport

Y1



I can edit a photo
I can type some words using a keyboard

I can sort images on a digital device



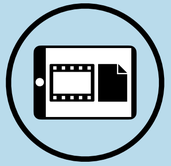
I know that an algorithm is a list of rules to follow to complete a task
I can test algorithms I have created

I can say how technology can help us in our everyday lives
I can save and reopen my work

I can say how to get help if I am worried about something on the Internet

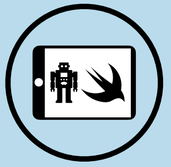
Computing passport

Y2



I can use Chrome Music Lab to create a musical pattern

I can organise data using technology (eg. to create block diagrams from tally charts)



I can create and debug simple programs

I can say how information technology is used beyond school

I know what personal information is and who to trust with it
I know what a digital footprint is

Computing passport

Y3

- I can create a stop frame animation
- I can create a yes/no branching database
- I can build a sequence of commands using Swift Playgrounds
- I can send information to another device (eg. Airdrop a file, send a message)
- I understand the dangers of sharing information and I can get help when an unsafe situation occurs online

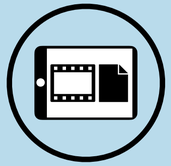
Computing passport

Y4

- I can record and edit a short movie using Clips
- I can use a digital device to collect data automatically and interpret it
- I can programme using loops in Swift Playgrounds
- I can describe the parts of a network and how they connect to form the internet
- I can identify images that are safe or unsafe to share online

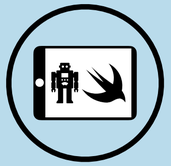
Computing passport

Y5



I can storyboard, capture and edit a video project
I can layer, group and duplicate objects

I can create graphs and charts from data



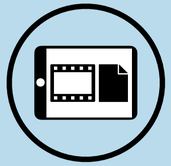
I can create a programme using variables

I know how search engines work and can use them to find information

I can create strong passwords
I know how online bullying happens and I can talk about how it makes me feel

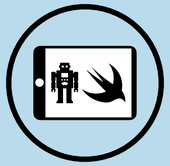
Computing passport

Y6



I can create and edit an extended video project for a purpose

I can construct a formula in a spreadsheet



I can design a project that uses inputs and outputs on a controllable device

I can choose methods of communication to suit particular purposes

I know I can block unwanted messages or people
I know that people can pretend to be others online for malicious reasons

Apps to support learning across the wider curriculum

Augmented Reality Apps

WWF Forests

Apollo's Moon Shot AR

EYFS - Cotswold Wildlife Trip

Mission to Mars AR

Year 5/6 - Space Topic

JigSpace