Computing

Intent

Computing at St Mary's is about wanting our pupils to be MASTERS of technology. Technology is everywhere and will play a pivotal part in students' lives. Therefore, we want to model and educate our pupils on how to use technology positively, responsibly and safely. We want our pupils to be creators not consumers and our broad curriculum and range of technological experiences reflects this. . We want our pupils to understand that there is always a choice with using technology and as a school we utilise technology (via our website, email communication and Twitter page) to model positive use. We recognise that the best prevention for a lot of issues we currently see with technology/social media is through education. 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 encourage staff to try and embed computing across the whole curriculum to make learning creative and accessible. We want our pupils to be fluent with a range of tools to best express their understanding and hope by Upper Key Stage 2, children have an extensive experience of the benefits of technology, the best ways to protect themselves and ensure they use it safely, and the vast possibilities it offers for the future.

Implement

Using Technology Effectively (Information Technology)	How Computers Work (Computer Science)	Programming, Coding and Control (Computer Science)
Word processing/ Typing	Computer Networks	Programming
Data Handling	Computational Thinking	De-bugging
Presentations	Web Design	
Photography	Sound and Music	
Virtual Reality		
Assessment: Our teachers form their assessments based on both output and independent use of skills. In the ICT Suite we have an assessment folder which is updated during lessons to identify children with particular strengths or weaknesses in particular areas. This is reviewed at the end of each unit and used to create an overall picture of competency.		
Digital Literacy: Online relationships, online reputation, managing online reputation, privacy and security are embedded across all of our units.		

Impact

We encourage our children to enjoy and value the curriculum we deliver. We will constantly ask the WHY behind their learning and not just the HOW. We want learners to discuss, reflect and appreciate the impact computing has on their learning, development and well being. We feel the way we implement computing helps children to continue to build on each stage of their learning and prepare them for the next stage of education and beyond. We encourage regular discussions between staff and pupils to best embed and understand this. The way pupils explore the curriculum integrates the use of VR headsets, PCs, laptops and IPads so that they understand the benefits and uses of varied technologies. We focus in e-safety throughout the curriculum with it being embedded each time we use technology within school along with dedicated e-safety days and assemblies.

Computing Topic and Skills Overview

EYFS	Subject Rationale:	Skills:
Nursery and Reception Continuous provision	Computing in the Early Years is embedded within all areas of the curriculum with children using cause and effect toys, class computers, VR headsets, interactive whiteboards, cameras, voice recorders and their own iPads to explore the world through technology. They are able to build on a range of skills to access and explore the world around them safely through technology. Pupils develop an insight in to how computers work; including gaining an understanding that information can be retrieved from a computer, as well as interacting with age appropriate software. Pupils are taught the importance of staying safe online and given strategies for what to do <u>Early Learning Goals:</u> Communication and Language • Offer explanations of why things might happen, making use of recently introduced vocabulary • Express their ideas and feelings about their experiences in full sentences using all tenses Personal, Social and Emotional Development • Set and work towards simple goals, being able to wait for what they want and control their immediate impulses where appropriate. • Be confident to try new activities showing independence, resilience and perseverance Physical Development • Use a range of small tools Literacy • Use and understand recently introduced vocabulary during discussions Understanding the World • Describe their immediate environment using knowledge from observation and discussion Expressive Arts and Design • Share their creations, explaining the process they have used • Invent, adapt and recount narratives and stories with teachers and peers	Development Matters Statements: Communication and Language • Be able to express a point of view • Learn new vocabulary • Use new vocabulary throughout the day • Use new vocabulary in different contexts • Listen and talk about selected non-fiction to develop a deep familiarity with new knowledge and vocabulary Personal, Social and Emotional Development • Show resilience and perseverance in the face of challenge • Think about the perspectives of others Physical Development • Match their developing physical skills to tasks and activities in the setting. • Choose the right resources to carry out their own plan Literacy • Read simple phrases and sentences made up of words with known letter-sound correspondence Mathematics • Understand positional words alone • Talks about and identifies patterns around them • Extend and create ABAB patterns • Select, rotate and manipulate shapes to develop spatial reasoning skills • Begin to describe a sequence of events, real or fictional using words such as 'first' 'then' Understanding the World • Talk about what they see using a wide vocabulary • Comment on images of familiar situations in the past • Draw information from a simple map Expressive Arts and Design • Listen attentively, move to and talk about music, expressing their feelings and responses • Watch and talk about dance and performance arts • Develop their own ideas and then decide which materials to use to express them • Explore and engage in music making and dance, performing solo or in groups

Year One:	Subject Rationale:		Skills:
Autumn:	**U.O: How computers work - 2 Type**	**U.O: Programming, Coding and Control Bee Bot (I-Pad)**	• Increase accuracy of typing and navigation of school interface.
Spring:	**U.O: Using technology effectively Internet and 2Graph**	**U.O: How computers work RS Unit – 1.3 2 Paint a Picture**	• Recognise instructions as an input and actions as an output. • Explore how data can be displayed in a variety of ways once inputted.
Summer:	**U.O: Using Technology Effectively RS unit – 1.5 2 Create a Story**	**U.O: Programming, Coding and Control J2 Code (LGFL site)**	• Creating a repeated pattern design • Use a range of features to create an interactive book. • Apply block coding as an algorithm
	Rationale: Children's experiences are predominantly tablet based prior to school so it is important to introduce them to the skills needed to use PCs and understand there are many uses of computers in everyday life and think about how technologies communicate. They begin to experience responsibility and online safety by being issued with their own passwords and log on more independently.		
Year Two	**Subject Rationale:**		
Autumn:	**U.O: Using Technology Effectively 2Type/ Word**	**U.O: How Computers work Internet**	**Skills:** • Improve finger positioning on the keyboard
Spring:	**U.O: Using Technology Effectively 2 Create a Story**	**U.O: Programming, Coding and Control Blue Bots (Ipad and blue bots)**	• Insert images and save documents independently • Understand how search engines rank results
Summer:	**U.O: Using Technology Effectively JIT5 (LGFL Infant toolkit)**	**U.O: Programming, Coding and Control RS Unit – 2.2 Scratch Jr**	• Evaluate and debug simple programs • Develop simple animations • Create game using block coding
	Rationale: Children develop accurate use of the keyboard and begin to produce different formats appropriate to the task. They are introduced to critical thinking about the internet and how simple games can be created. They are introduced to how documents can be produced using their work in class.		
Year Three	**Subject Rationale**		**Skills:**
Autumn:	**U.O: Use Technology effectively Word**	**U.O: How Computers Work RS Unit - 3.5 E-mailing**	• Improve a word document using options within 'Insert' tab.

Topics			Skills:
Spring:	**U.O: Programming, coding and control** **Flowol 4**	**U.O: Programming, coding and control** **Wedo Lego- Roaring Lion**	• Explore e-mails interface and related e-safety. • Create an algorithm for a real life context mimic • Develop knowledge of networks and the internet and how information travels. • Moving physical creations using a computer • Identify IP addresses and domains • Use movie software to create a short clip
Summer:	**U.O: How Computers Work** **RS Unit – 3.4** **Networks including the internet**	**U.O: Using Technology Effectively** **RS Unit – 3.3** **MovieMaker**	
	Rationale: Children should be accomplished users of the PC set up and independently access and look for issues during log on (checking power sources, password corrections etc). Using their understanding of programming they now move onto creating more complex algorithms for on screen and model outputs. Their understanding of the way computers communicate is deepened and they are introduced to using it to communicate via e-mail.		
Topics	**Year Four**		**Skills:**
Autumn:	**U.O: How Computers Work** **E-Safety – CyberPass (LGfL)**	**U.O: Programming, Coding and Control** **WeDo- Hungry Crocodile**	• Create and analyse an online voting system • Create algorithms for and debug a Lego programme • Explore link between digital technology and movie creation. • Use Powerpoint features to create an engaging presentation. •
Spring:	**U.O: Using Technology Effectively** **RS Unit 4.6** **PowerPoint**	**U.O: How Computers Work** **RS Unit – 4.3** **GarageBand/ Audacity**	
Summer:	**U.O: Using Technology Effectively** **J2 Vote (LGFL site)**	**U.O: Programming, Coding and Control**	
	Rationale: Children now have many home and school technology experiences on a range of platforms. The initial focus is on using these independently and safely through an in-depth learning and assessment program. They build upon prior learning presenting other curriculum learning through more complex computer software and exploring real life contexts of online voting and data collection.		•
Topics	**Year Five**		**Skills**

			Skills
Autumn:	**U.O: Using Technology Effectively Publisher**	**U.O: Programming, Coding and Control Wedo – Sports Star**	- Explore publisher interface and produce non-fiction booklet including key features. - Write 2 algorithms to control 2 interacting models. - Identify how a website is constructed and understand HTML coding. - Create and online learning summary using IPads. - Use a sequential program to make still to motion picture.
Spring:	**U.O: How Computers Work RS Unit 5.4 WordPress**	**U.O: How Computers Work RS Unit – 5.2 Black Chamber**	
Summer:	**U.O: Using Technology Effectively Poplet (IPad)**	**U.O: Programming, Coding and Control Stop Frame Animator (LGfL)**	
	Rationale: Most children are now competent users of technology and understand the benefits and limitations of a range of online and software choices. They continue to build upon their experience of presenting information and knowledge in a variety of ways allowing them to be more critical about their choices. Their knowledge of the operation of computers and computing systems is developed through the units in the Spring term.		
Topics	**Year Six**		**Skills**
Autumn:	**U.O: Using Technology Effectively 2 Type /Mathletics (App?)**	**U.O: Using Technology Effectively Kahoot (IPad)**	- Develop speed and accuracy of typing skills. - Identify features and purpose of online questionnaires and create own suitable for purpose. - Show progression in managing online profile. - Create a webpage using HTML coding - Create a game using at least to separately programmed mimics that interact. - Design and de-bug a design that can be constructed through the 3D printer.
Spring:	**U.O: How Computers work E- Safety- CyberPass (LGfL site)**	**U.O: How Computers Work WebTech Tutor (LGFL site)**	
Summer:	**U.O: Programming, Coding and Control Scratch**	**U.O: Programming, coding and control 3D printing**	
	Rationale: Children have had a wide technological experience across their curriculum and these units build upon this to prepare them for the next stage of their lives. The children re-visit some of the programs they have used previously in their school experience and they independently apply the skills they have to more complex, multi-		

| | player or level games. The move onto higher levels of refining their typing speed and accuracy and have more access to completing subject task online. They explore how websites are created and coded before finishing the year with an understanding of creating a design on the computer which is then produced as a model. Throughout these units they are required to apply their understanding, de-bugging and evaluative skills from earlier on in the year. There is also a higher level focus on e-safety in an explicit unit that focus on their independent responsible use of their devices and the profiles. | |

The National Curriculum states that:

Subject content

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 repetition 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.

Please see the Computing Overview for more details.