Learning in Computing at St Margaret Mary's

We try to follow Jesus in everything we do.

Why is Computing important at St Margaret Mary's?

Intent

Our Computing and Information Technology curriculum has been specifically tailored to meet the needs of our school community. It is designed to be broad and balanced, providing all pupils with the opportunity to curious and wise in their learning and knowledge. To be attentive and discerning in order to make sense of the world around them and give purpose as to why we learn about and from Computing. This will help them become faith filled and hopeful in their abilities to change and transform our society.

We believe that computing helps to prepare the children for life in 21st century Britain, encouraging children to develop a greater understanding of technology and the digital world around them.

Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Implementation

Computing is taught through the framework of the 2014 National curriculum. The principles and content of its requirements have been carefully placed at the heart of the school's programmes of study in computing.

The school uses the 'NCCE Teach computing' Scheme of work, focusing on: Algorithms, Computer networks, Computer systems, Creating media, Data and information, design and development, Effective use of tools, Impact of technology, Programming and Safety and security.

This is a transition that has taken place this year, with consultation and ongoing support from our specialist teacher, Jamie Edmondson. Jamie Edmondson's own scheme 'JE computing (project live)' has been used previously, however we believe the NCCE Teach Computing scheme provides a more updated approach to teaching computing. By the academic year 24/25 this scheme will be fully implemented with mixed year groups operating on a two-year cycle that ensures progression of key skills.

This scheme of work is supplemented, with a selection of units from the 'JE computing' scheme of work to ensure a broad and balanced approach to Computing.

ProjectEVOLVE is an online resource we use to equip our children for a digital life. This resource

covers each of the statements from the UK Council for Internet Safety's framework "Education for a Connected World". Staff use ProjectEVOLVE as an additional digital literacy resource to what is covered in our 'NCCE Teach Computing' Scheme of work.

These principles are directly linked to the school's Age-Related Expectations (AREs) in computing for each year group which allows a consistent application of the curriculum throughout the Key stages. A class floor book is kept for each class. The floor book provides evidence of coverage within the subject and key reference to where the children meet the A.R.E statements. Each year group has a class login and an individual login to save their work on the system.

IPADs and laptops are used throughout the school and timetabled on a weekly basis. Teachers can block their computing timetable on a half termly basis with a minimum of 2 sessions per half term.

In Computing, assessment of pupil progress is undertaken against the age-related expectations for Computing. This includes any final pieces of work and any whole class assessment that staff might undertake. The outcomes of these assessments are used by class teachers to evaluate the quality of coverage of the ARE in Computing and to inform aspects of learning that need to be strengthened to improve the quality of provision and to enhance pupil progress.

Impact

A high quality of computing education aims to develop a range of programming and technological skills that are transferable to other curriculum areas, including Science, Mathematics, English and History.

As they, progress through primary school children will become increasingly confident in:

• The application of their digital skills,

• Becoming increasingly efficient and effective communicators, collaborators and analysts,

• Showing imagination and creativity in their use of ICT in different aspects of their learning and life beyond school.

• E-safety and the risks involved when using the internet.

We seek to inspire in children a love of computing and the aims of computing is to equip children with the skills necessary to use technology to become independent learners. The teaching style that we adopt is as active and practical as possible.

Computing Long Term Plan
2023-24

Year	Cycle	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS		TBC					
1/2	A	**Online Safety** *Project Live Scheme (IT focus)*	**Online Safety** *Project Live Scheme (Programming)*	**Online Safety** **Programming Block B 2.6** **Programming quizzes** Using and modifying designs to create quiz questions in Scratch Jr and realise these designs in Scratch Jr using blocks of code (Scratch Jnr)	**Online Safety** **Managing online information** **Creating Media 1.2** **Digital painting** Choosing appropriate tools in a program to create art and making comparisons with working non-digitally. (Seesaw drawing tool, paintz.app)	**Online Safety** **Health, Well-being and lifestyle** **Creating Media 1.5** **Digital writing** Using a computer to create and format text, before comparing to writing non-digitally. (J2e write, Wordpad, Seesaw note tool)	**Online Safety** **Privacy and security** **Copyright and ownership** **Creating Media 2.2** **Digital photography** Experience capturing, editing, and improving photos, including understanding that not all images they see online are real.
	B	**Online Safety** **Self-image and identity** **Online relationships**	**Online Safety** **Online reputation**	**Online Safety** **Online bullying**	**Online Safety** **Managing online information**	**Online Safety** **Health, Well-being and lifestyle**	**Online Safety** **Online bullying**
3/4	A	**Online Safety** **Self-image and identity** **Online relationships** *Project Live Scheme*	**Online Safety** **Online reputation** *Project Live Scheme*	**Online Safety** **Online bullying** *Project Live Scheme*	**Online Safety** **Managing online information** **Creating Media** **Stop frame animation** Capturing and editing digital still images to produce a stop-frame animation that tells a story. (iMotion)	**Online Safety** **Health, Well-being and lifestyle** **Data and information** **Branching databases** Building and using branching databases to group objects using yes/no questions. (j2data Branch and Pictogram)	**Online Safety** **Privacy and security** **Copyright and ownership** **Programming Block B** **Events and actions in programs** Writing algorithms and programs that use a range of events to trigger sequences of actions. (Scratch)
	B	**Online Safety** **Self-image and identity** **Online relationships**	**Online Safety** **Online reputation**	**Online Safety** **Online bullying**	**Online Safety** **Managing online information**	**Online Safety** **Health, Well-being and lifestyle**	**Online Safety** **Privacy and security** **Copyright and ownership**

5		**Online Safety** **Self-image and identity** **Online relationships** *Project Live Scheme (spreadsheets)*	**Online Safety** **Online reputation** *Project Live Scheme (IT creating media)*	**Online Safety** **Online bullying** **Creating Media** **Introduction to vector graphics** Creating images in a drawing program by using layers and groups of objects. (Google Drawings/Publisher)	**Online Safety** **Managing online information** **Creating Media** **Introduction to vector graphics** *(continue)* Creating images in a drawing program by using layers and groups of objects. (Google Drawings/Publisher)	**Online Safety** **Health, Well-being and lifestyle** **Programming Block 5B** **Selection in quizzes** Exploring selection in programming to design and code an interactive quiz. (Scratch)	**Online Safety** **Privacy and security** **Copyright and ownership** Connecting systems and networks **Systems and searching** Recognising IT systems in the world and how some can enable searching on the internet. (Google Slides)
6		**Online Safety** **Self-image and identity** **Online relationships** *Project Live Scheme*	**Online Safety** **Online reputation** *Project Live Scheme*	**Online Safety** **Online bullying** *Project Live Scheme*	**Online Safety** **Managing online information** **Creating Media** **Webpage creation** Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation. (Google sites)	**Online Safety** **Health, Well-being and lifestyle** **Programming Block 6A** **Variables in games** Exploring variables when designing and coding a game. (Scratch)	**Online Safety** **Privacy and security** **Copyright and ownership** **Creating Media** **3D modelling** Planning, developing, and evaluating 3D computer models of physical objects. (Tinkercad)

Computing Long Term Plan
2024-25

Year	Cycle	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS		Teachers to go by a needs met approach, using technology where it fits in with their current areas of learning, utilising resources from the Project Live EYFS SOW and Barefoot Computing EYFS. Teachers refer to this document which outlines the key skills that pupils should develop in order to prepare them for formal Computing at the start of Key Stage One.					
1/2	A	Online Safety **Self-image and identity** **Online relationships** Connecting systems and networks 1.1 **Technology around us** Recognising technology in school and using it responsibly	Online Safety **Online reputation** Creating Media 2.2 **Digital Music** Using a computer as a tool to explore rhythms and melodies, before creating a musical composition. (Chrome Music Lab)	Online Safety **Online bullying** Programming Block A 1.3 **Moving a robot** Identifying what each floor robot command does and using that knowledge to start predicting the outcome of programs (BeeBots or alternative)	Online Safety **Managing online information** Data and information 2.4 **Pictograms** Collecting data in tally charts and using attributes to organise and present data on a computer. (j2data pictogram)	Online Safety **Health, Well-being and lifestyle** Creating Media 2.2 **Digital photography** Experience capturing, editing, and improving photos, including understanding that not all images they see online are real.	Online Safety **Privacy and security** **Copyright and ownership** Programming Block B 1.6 **Programming animations** Designing and programming the movement of a character on screen to create an animation (Scratch Jnr)
	B	Online Safety **Self-image and identity** **Online relationships** Connecting systems and networks 2.1 **Information technology around us** Identifying IT and how its responsible use improves our world in school and beyond.	Online Safety **Online reputation** Creating Media 1.2 **Digital painting** Choosing appropriate tools in a program to create art and making comparisons with working non-digitally. (Seesaw drawing tool and paintz.app)	Online Safety **Online bullying** Programming Block A 2.3 **Robot algorithms** Creating and debugging programs and using logical reasoning to make predictions. (BeeBots or alternative)	Online Safety **Managing online information** Data and information 1.4 **Grouping data** Introduction to information and data by labelling and sorting objects into groups.	Online Safety **Health, Well-being and lifestyle** Creating Media 1.5 **Digital writing** Using a computer to create and format text, before comparing to writing non-digitally. (J2e write, Wordpad, Seesaw note tool)	Online Safety **Privacy and security** **Copyright and ownership** Programming Block B 2.6 **Programming quizzes** Using and modifying designs to create quiz questions in Scratch Jr and realise these designs in Scratch Jr using blocks of code (Scratch Jnr)
3/4	A	Online Safety **Self-image and identity** **Online relationships** Connecting systems and networks 3.1 **Connecting Computers** Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks (Painting program - www.paintz.app)	Online Safety **Online reputation** Creating Media 3.5 **Desktop Publishing** Creating documents by modifying text, images, and page layouts for a specified purpose. (www.canva.com)	Online Safety **Online bullying** Programming Block A 3.3 **Sequencing Sounds** Creating sequences in a block-based programming language to make music (Scratch)	Online Safety **Managing online information** Data and information 4.4 **Data logging** Recognising how and why data is collected over time, before using data loggers to carry out an investigation. (Micro:Bits or Google Science Journal iPad app)	Online Safety **Health, Well-being and lifestyle** Creating Media 4.2 **Audio Production** Capturing and editing audio to produce a podcast, ensuring that copyright is considered. (Garageband iPad app or Bandlab app / browser)	Online Safety **Privacy and security** **Copyright and ownership** Programming Block A 4.3 **Repetition in Shapes** Using a text-based programming language to explore count-controlled loops when drawing shapes. (Turtle Academy Playground)

	B	**Online Safety** **Self-image and identity** **Online relationships** **Connecting systems and networks 4.1** **The internet** Recognising the internet as a network of networks including the WWW, and why we should evaluate online content. (Various websites)	**Online Safety** **Online reputation** **Creating Media 4.5** **Photo editing** Manipulating digital images and reflecting on the impact of changes and whether the required purpose is fulfilled. (https://pixlr.com/express/)	**Online Safety** **Online bullying** **Programming Block A 3.6** **Events and actions in programs** Writing algorithms and programs that use a range of events to trigger sequences of actions. (Scratch)	**Online Safety** **Managing online information** **Data and information 3.4** **Branching databases** Building and using branching databases to group objects using yes/no questions. (https://www.j2e.com/j2data)	**Online Safety** **Health, Well-being and lifestyle** **Creating Media 3.2** **Stop frame animation** Capturing and editing digital still images to produce a stop-frame animation that tells a story. (iMotion iPad app)	**Online Safety** **Privacy and security** **Copyright and ownership** **Programming Block B 4.6** **Repetition in games** Using a block-based programming language to explore count-controlled and infinite loops when creating a game. (Scratch)
5		**Online Safety** **Self-image and identity** **Online relationships** **Connecting systems and networks 5.1** **Systems and searching** Recognising IT systems in the world and how some can enable searching on the internet. (Google Slides)	**Online Safety** **Online reputation** **Creating Media 5.2** **Video Production** Planning, capturing, and editing video to produce a short film. (Camera app plus iMovie for editing)	**Online Safety** **Online bullying** **Programming Block 5A** **Selection in physical computing** Exploring conditions and selection using a programmable microcontroller. (Crumble controller)	**Online Safety** **Managing online information** **Data and information 5.4** **Flat file databases** Using a database to order data and create charts to answer questions. (j2data Database)	**Online Safety** **Health, Well-being and lifestyle** **Creating Media 5.5** **Introduction to vector graphics** Creating images in a drawing program by using layers and groups of objects. (Google Drawings/Publisher)	**Online Safety** **Privacy and security** **Copyright and ownership** **Programming Block 5B** **Selection in quizzes** Exploring selection in programming to design and code an interactive quiz. (Scratch)
6		**Online Safety** **Self-image and identity** **Online relationships** **Connecting systems and networks 6.1** **Communication and collaboration** Exploring how data is transferred by working collaboratively online. (Google Slides)	**Online Safety** **Online reputation** **Creating Media 6.2** **Webpage creation** Designing and creating a webpage(s), giving consideration to copyright, aesthetics, and navigation. (Google sites)	**Online Safety** **Online bullying** **Programming Block 6A** **Variables in games** Exploring variables when designing and coding a game. (Scratch)	**Online Safety** **Managing online information** **Data and information 6.4** **Introduction to spreadsheets** Answering questions by using spreadsheets to organise and calculate data. (Google sheets/Excel)	**Online Safety** **Health, Well-being and lifestyle** **Creating Media 6.5** **3D modelling** Planning, developing, and evaluating 3D computer models of physical objects. (Tinkercad - https://www.tinkercad.com/)	**Online Safety** **Privacy and security** **Copyright and ownership** **Programming block 5A** **Sensing movement** Using the Micro:Bit to draw together learning of all the main programming constructs (Micro:Bits)

What Computing looks like at St Margaret Mary's

What a computing lesson looks like at our school:

Computing is delivered using the 'NCCE Teach Computing' scheme and supported by specialist computing teacher Jamie Emondson (owner and developer of JE computing live scheme). We also use the JE computing scheme as an addition and/or alternative within some of the JE computing units.

Jamie Emondson supports teachers with planning, adapting, team teaching and assessment of the computing curriculum 0.5 of the weekly timetable.

Planning:

Planning and support material information is provided within the NCCE Teach Computing scheme.Teachers have the freedom to link the computing units with cross curricular subjects and topics.

Planning is progressive across each key stage and is provided to support the teaching and delivery of each unit, along with tutorial videos and supporting materials.

Key stage 1, lower key stage 2 and upper key stage 2 map out the units they intend on teaching across a two year cycle. Both key stages work together and are consistent in what they teach in order to ensure ARE and coverage for the mixed and single year group classes.

The NCCE Teach Computing scheme of work that we use covers the programmes of study across ten unit areas:

- Algorithms
- Computer networks
- Computer systems
- Creating media
- Data and information
- Design and development
- Effective use of tools
- Impact of technology
- Programming
- Safety and security

These units are consistent from EYFS up to year 6.

Additional internet safety lessons are planned for and taught across the school at least every half term additional to class discussions and cross curricular lessons, for example PSHE that also covers internet safety. We use the 'ProjectEVOLVE' resource to teach our internet safety lessons each half term from EYFS to year 6 (materials used in this resource uses the statements from the UK Council for Internet Safety's (UKCIS) framework "Education for a Connected World").

Teaching

Computing is taught in afternoon blocks. Teachers plan a minimum of 2-3 afternoons per half term to teach computing (this may vary throughout the year to fit timetable of team teaching with J. Edmondson).

Within each of the six unit areas there is a series of 6 lesson plans, learning materials/resources and information on type of software/digital resource to be used, i.e. pic collage app, scratch etc, as well as a tutorial video.

One unit per half term will be taught in class across 2-3 planned 'computing afternoons'. Our expectation is for the content in each lesson to be taught in their progressive order to ensure completion of the unit.

What teaching 'looks like' for each unit will vary depended on the intended learning outcome for that specific unit. Children will learn and develop new skills using a range of media and technical resources.

Displays:

There is a whole school computing display which celebrates the children's learning from their computing and internet safety lessons. The display consists of samples of work and photographs from the children's computing lessons and a brief explanation to explain what the children have been learning.

Assessment:

Computing is taught from reception up to year 6 across six units and progress is measured from level 1 up to level 5. At the end of each unit teachers complete an assessment with ARE statements matched to the unit 'level' completed and statements that match what an emerging or exceeding pupil within the lower or higher 'levels' may be working at. Teachers complete this assessment by initialling all children at the 'level' they are working at. Every unit in the Teach Computing Curriculum includes an optional summative assessment framework in the form of either a multiple-choice quiz (MCQ) or a rubric. These are electronic versions of the paper-based multiple- choice quizzes in the curriculum. Teachers make assessment judgements based on their teacher knowledge, pupil's understanding of task, completion of task and criteria met, questioning and responses and samples of work/photo evidence. A long term assessment grid is completed to show an overview of pupils attainment across the 6 units for each academic year.

Inclusion:

Computing is planned for according to the individual needs of the children – in line with the whole school policy surrounding equal opportunities and based upon our school aim to recognise that each child is unique. There are many ways in which SEND children can access the computing curriculum including:

- Ensuring familiarity with equipment
- The use of small steps during practical tasks to ensure pupils are not overwhelmed by task or information given
- Differentiated tasks that are adapted to meet the needs of pupils
- Additional adult support to ensure the development of skills
- Suitable resources that support learning and allow full participation
- Opportunities for paired and collaborative working with peers
- Adapatations and/or additional resources may be required to support specific needs, for example, increased font sizes, screen filters to cut down glare, talking word processor, a foot-controlled mouse etc
- Use of a memory aid to support pupils revisiting the new knowledge and skills learned

Monitoring:

Computing is monitored by the subject leader throughout the year in the form of a computing floor book which is used across the school. A transition to work being monitored via Google classroom and Seesaw is underway, with the aim to have computing work evidenced digitally. The subject leader uses this to look at the outcomes from each half term and identify the learning and understanding taking place and establish the impact of the teaching. Monitoring and support for the teaching and delivery of the computing curriculum is also offered to staff through regular contact with computing lead, weekly technical support (from one education) and specialist computing teacher, J. Edmondson and. The subject leader also uses staff and pupil voice and other evidence, e.g. displays, work in books that demonstrate pupils applying computing skills in cross curricular subjects.

Parents:

Parents are supported and encouraged to be involved in internet safety and computing workshops. We work closely with the Manchester Healthy Schools team who come into school to deliver the workshop and provide support and information. We keep parents up to date with the computing scheme and the teaching of internet safety via letter and/or email. Parents are informed of the units we use as part of our scheme and any units that may require parental consent. Parents can find useful links and information on our school website to support the use of technology at home.

Our school digital leaders also provide parents with information about computing and internet safety learning in school for example, information about competitions.

How do we know our children have made progress?

By completing the computing units and using the projectEVOLVE resource pupils at the end of each key stage should be able to apply the computing skills and knowledge they have learnt using a range of digital devices and software within their computing lesson and across other subject areas and in their everyday life. They will also be aware of internet safety, know how to be a responsible digital citizen and know where and who to go to for help and support.

Progression of skills

ELG 13 – Past and Present	**ELG 14 – People, Culture and Communities**
- Talk about the lives of the people around them and their roles in society; - Know some similarities and differences between things in the past and now, drawing on their experiences and what has been read in class; - Understand the past through settings, characters and events encountered, in books read in class and storytelling.	- Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps; - Know some similarities and differences between different religious and cultural communities in this country, drawing on their experiences and what has been read in class; - Explain some similarities and differences between life in this country and life in other countries, drawing on knowledge from stories, non-fiction texts and – when appropriate – maps.

Purpose

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of con tent. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

KS1	KS2
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	Pupils should be taught: • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

• 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.	• 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.

	Pre-school	**Nursery**	**Reception**	**Links to KS1**
Computing links	- Seeks to acquire basic skills in turning on and operating some digital equipment - Operates mechanical toys, e.g. turns the knob on a wind-up toy or pulls back a friction car - Shows an interest in tablets by touching icons/apps of interest - Explores how things work by touching, pressing, pulling or moving parts	- Shows interest in technological toys with knobs or pulleys, real objects such as cameras, and touch screen devices such as mobile phones and tablets - *Can play simple games on the Interactive Whiteboard by dragging and dropping items (NR)* - Children can take photos on the camera - Knows that information can be retrieved from digital devices and the internet	- Children can independently change games or increase levels of difficulty on games - Can create content such as a video recording, stories, and/or draw a picture on screen - Develops digital literacy skills by being able to access, understand and interact with a range of technologies - Children know to ask for help if needed	- Create and debug 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 respectively, keeping personal information private; identify where to go for help and support when they have concerns about

		- Knows to ask an adult for help when they are unsure of how to work a technical device, tablet or toy	- Children know what personal information is and know that it should not be shared online - Can use the internet with adult supervision to find and retrieve information of interest to them	content or contact on the internet or other online technology.