Computing Curriculum Offer

I can do all things through Christ who strengthens me

Our School Vision

St Mary's Catholic Infant and Junior Academies work together to create a caring, friendly and faith-centred community, where we seek to realise the full potential of all our family through the living love of Christ. All our work with children and their families, staff, governors, parishioners and the wider community is influenced by our core values:

Compassion, Respect and Resilience.

Intent

The purpose of our Arches Curriculum is to ensure that our children are **successful** in life and learning. The 'Nine Arches' Sankey Viaduct in Newton-le-Willows has been the inspiration for our curriculum. The viaduct was built by George Stephenson between 1828 and 1830 and the bridge, built to let trains cross above the Sankey Canal, has international significance as the world's earliest major railway viaduct still in use.

At St Mary's, we use the Kapow Primary Computing scheme to deliver a rich, engaging, and progressive computing curriculum. Our intent is to equip pupils with the knowledge, skills, and confidence to thrive in a digital world. We aim to foster curiosity, creativity, and resilience through hands-on experiences with technology, while ensuring pupils understand how to use digital tools safely and responsibly.

From this, we teach to the Arches Principles –

Ambitious – Resilience – Christ at the Heart – Health and Wellbeing – Excellence – Success

Ambitious

We believe every child has the potential to be a trailblazer in the digital world. We deliver an ambitious curriculum that nurtures curiosity, creativity, and resilience. Our aim is to empower pupils to think boldly, act responsibly, and dream big—using technology as a tool to shape their futures.

Resilience

Resilience is a cornerstone of lifelong learning. The Computing curriculum nurtures pupils who are not only digitally skilled but also resilient in the face of challenge. Our curriculum is designed to encourage learners to embrace mistakes, persevere through problems, and develop the confidence to try, fail, and try again

Christ at the Heart

Every child is uniquely created in the image of God, with gifts and potential to flourish. Our computing curriculum reflects our Christ-centred vision: to nurture learners who use technology wisely, creatively, and compassionately.

Health and Wellbeing

Computing is not just about technology—it's about nurturing healthy, balanced learners who can thrive in a digital world. Through the Computing curriculum, we aim to promote positive wellbeing, emotional resilience, and safe digital habits alongside technical skills.

Excellence

At St Mary's, we believe that excellence is not just an outcome—it's a mindset. Through the Computing curriculum, we ensure pupils to strive for their personal best in every digital challenge. Our aim is to deliver a curriculum that inspires high achievement, deep understanding, and purposeful creativity.

Success

We are committed to unlocking every child's potential and preparing them for success in an increasingly digital world. Our Computing curriculum provides a rich and ambitious learning journey that equips pupils with the skills, confidence, and mindset to succeed—now and in the future.

Our Arches Principles - Rationale for our Computing Curriculum

	Through the **'ambitious'** curriculum driver we want our children to relish challenges that being a computer scientist can bring: asking perceptive questions, thinking critically, weighing evidence, sifting arguments, and developing perspective and judgement. Our computing curriculum is to prepare our children for a rapidly changing world through the use of technology. Our high-quality computing curriculum is designed to enable them to use computational thinking and creativity to further understand the world.

	Through the 'resilience' curriculum driver, we promote optimism and determination in computing. Not only do we want our pupils to be digitally literate and competent end-users of technology, we also want them to develop creativity, resilience and problem-solving as well as critical thinking skills. A selection of carefully chosen challenges are embedded within our computing curriculum to promote resilience. Children are encouraged to be resilient and good at problem solving using key computational thinking skills such as abstraction, decomposition, generalisation and pattern spotting.

	As a Catholic school we place **Christ at the centre** of all that we do. We aim to provide a Computing Curriculum that empowers our children with the knowledge, skills, and values required to thrive in the digital age. We aim to foster a deep understanding of technology whilst promoting responsible digital citizenship with our core value of compassion at the forefront of our computing teaching.

	At St Mary's, we understand that happiness is linked to personal growth, health and development. We ensure our children are happy, healthy individuals. In computing, children can discuss and reflect upon the impact that computing has on their learning, development and their wellbeing. Pupils are able to find a balance between their online and offline life and understand why this balance is essential. Our computing curriculum inspires confident users of technology who are competent digital citizens of the future. With 'wellbeing' as a curriculum driver, we give children the confidence to thrive in a diverse, global society and be respectful citizens with British and Christian Values at the core.

	The core of computing is computer science, in which pupils are taught the principles of how digital systems work, and how to put this knowledge to use through programming. Apply the skills from the close cross curricular links with mathematics, science, and design technology.

	Through **'success'**, we raise aspirations to broaden our children's horizons – opening their eyes to the myriad careers they might pursue. We have carefully planned and incorporated visits from guest speakers within the local area who have careers in computer technology. Our children aspire to work towards careers in the field of computing. These tangible role models have the effect of raising the aspirations of our pupils to inspire them to work even harder to be the best that they can be. We want our pupils to have a clear understanding of the link between achieving well and having goals for the future.

Being a St Mary's Computer Scientist

Computing at the Federation of St. Mary's Catholic Schools has its foundations set in the three strands of the Primary National Curriculum: Digital Literacy, Information Technology and Computer Science.

Being a computer scientist means that children will have developed the knowledge, skills and understanding to help them access and use a range of technology in a safe and creative way. Our approach to online safety cross references Teaching Online Safety in Schools (DFE 2023) and Education for a Connected World (UK Council for Internet Safety 2020). It is delivered via our RSHE and Computing curriculum, alongside stand-alone online safety lessons.

Children will have developed skills that equip them to use computational thinking and creativity to understand and change the world.

Implementation

Our Computing curriculum aims to instil a sense of enjoyment around using technology and to develop pupil's appreciation of its capabilities and the opportunities technology offers to, create, manage, organise, and collaborate. To support our teaching of Computing, we have chosen to use a scheme from Kapow Primary, from this resource we have selected a series of units of work to enable pupils to meet the End of Stage Attainment targets outlined in the National Curriculum.

Through using the Kapow Primary resources and adapting them for our children's needs, we intent for pupils not only to be digitally competent and have a range of transferrable skills at a suitable level for the future workplace, but also to be responsible online citizens.

Computing Long Term Plan

St Marys 'Arches Curriculum' - all our planning is based on our key principles and intent for our curriculum.

"I can do all things through Christ who strengthens me."
Philippians 4:13

Respect | Compassion | Resilience

St Mary's Catholic Academies
Computing LONG TERM PLAN 2024-2025

St Marys 'Arches Curriculum' - all our planning is based on our key principles and intent for our curriculum						
Ambitious Resilience, Christ at the Heart, Health and Wellbeing, Excellence, Success						
Year Group	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Nursery	Following instructions 1		Following instructions 2		Simple instructions for Bee-Bots	
	Computing through continuous provision					
Reception	Programming 1: All about instructions		Programming 2: Programming Bee-Bots		Computing systems and networks 1: Using a computer	Computing systems and networks 2: Exploring hardware
	Computing through continuous provision					
Year One	Programming 1: Algorithms unplugged Bee-Bots	Computing systems and networks: Improving Mouse Skills	Skills showcase: Rocket to the moon	Programming 2: Bee-Bots	Creating Media: Digital Imagery	Data handling: Introduction to data
Year Two	Programming 1: Algorithms and Debugging		Computing systems and networks 1: What is a computer?	Programming 2: Introduction to block coding	Creating Media: Stop Motion	Data handling: ISS
Year Three	Programming 1: Scratch		Computing systems and networks: Networks 1	Computing systems and networks 2: emailing	Creating Media: Video trailers	Data handling: Comparison cards
Year Four	Programming 1: Further Scratch	Computing systems and networks: collaborative learning	Creating Media: Website design	Programming 2: Computational thinking	Skills showcase: HTML	Data handling: Investigating weather
Year Five	Computing systems and networks 1: Search Engines	Programming 1: Music Scratch	Skills showcase: Mars Rover 2	Programming 2: Micro: bits	Creating Media: Stop Motion Animation	Data handling: Mars Rover 1
Year Six (condensed curriculum)	Computing systems and networks	Data Handling: Big data 1			Computing systems and networks: Exploring AI	Programming: Intro to Python
Online safety is taught throughout the school year with the first lesson from each half term starting with an online safety lesson. **This is deepened further through Internet Safety Day in February.**						

Progression Documents

A comprehensive set of progression documents are available from Kapow Primary, a sample of which has been provided. These are all accessed by staff through Kapow (and are not published in entirety here due to copyright reasons).

Progression of skills — **Computer science**

	EYFS	Year 1	Year 2
Computational thinking	Using logical reasoning to understand simple instructions and predict the outcome.	Learning that decomposition means breaking a problem down into smaller parts. Using decomposition to solve unplugged challenges. Using logical reasoning to predict the behaviour of simple programs. Developing the skills associated with sequencing in unplugged activities. Following a basic set of instructions. Assembling instructions into a simple algorithm.	Articulating what decomposition is. Decomposing a game to predict the algorithms used to create it. Learning that there are different levels of abstraction. Explaining what an algorithm is. Following an algorithm. Creating a clear and precise algorithm. Learning that programs execute by following precise instructions. Incorporating loops within algorithms.

Progression of skills — **Computer science**

	Year 3	Year 4	Year 5	Year 6
Computational thinking	Using decomposition to explain the parts of a laptop computer. Using decomposition to explore the code behind an animation. Using repetition in programs. Using logical reasoning to explain how simple algorithms work. Explaining the purpose of an algorithm. Forming algorithms independently.	Using decomposition to solve a problem by finding out what code was used. Using decomposition to understand the purpose of a script of code. Identifying patterns through unplugged activities. Using past experiences to help solve new problems. Using abstraction to identify the important parts when completing both plugged and unplugged activities.	Decomposing animations into a series of images. Decomposing a program without support. Decomposing a story to be able to plan a program to tell a story. Predicting how software will work based on previous experience. Writing more complex algorithms for a purpose.	Decomposing a program into an algorithm. Using past experiences to help solve new problems. Writing increasingly complex algorithms for a purpose.

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To know that being able to follow and give simple instructions is important in computing. To understand that it is important for instructions to be in the right order. To understand why a set of instructions may have gone wrong. To know that you can program a Bee-Bot with some simple commands. To understand that debugging means how to fix some simple programming errors. To understand that an algorithm is a set of clear and precise instructions.	To understand that an algorithm is when instructions are put in an exact order. To know that input devices get information into a computer and that output devices get information out of a computer. To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing. To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'. To understand the basic functions of a Bee-Bot. To know that you can use a camera/tablet to make simple videos. To know that algorithms move a bee-bot accurately to a chosen destination.	To understand what machine learning is and how that enables computers to make predictions. To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times. To know that abstraction is the removing of unnecessary detail to help solve a problem. To know that coding is writing in a special language so that the computer understands what to do. To understand that the character in ScratchJr is controlled by the programming blocks. To know that you can write a program to create a musical instrument or tell a joke.	To know that Scratch is a programming language and some of its basic functions. To understand how to use loops to improve programming. To understand how decomposition is used in programming. To understand that you can remix and adapt existing code.	To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch. To know what a conditional statement is in programming. To understand that variables can help you to create a quiz on Scratch. To know that combining computational thinking skills (sequence, abstraction, decomposition etc) can help you to solve a problem. To understand that pattern recognition means identifying patterns to help them work out how the code works. To understand that algorithms can be used for a number of purposes e.g. animation, games design etc.	To know that a soundtrack is music for a film/video and that one way of composing these is on programming software. To understand that using loops can make the process of writing music simpler and more effective. To know how to adapt their code while performing their music. To know that a Micro:bit is a programmable device. To know that Micro:bit uses a block coding language similar to Scratch. To understand and recognise coding structures including variables. To know what techniques to use to create a program for a specific purpose (including decomposition).	To know that there are text-based programming languages such as Logo and Python. To know that nested loops are loops inside of loops. To understand the use of random numbers and remix Python code.

Vocabulary is VITAL

Valued	We value vocabulary in computing and it underpins everything we do.
Identified	Computing vocabulary is identified by the computing subject leader and is explicitly planned for.
Taught	Vocabulary is explicitly taught in every lesson. Our knowledge organisers are used as a teaching tool for key computing vocabulary and the computing medium term plans include additional vocabulary to be taught.
Applied	Once vocabulary is taught, it is applied. Children apply their vocabulary in their speaking and listening, writing and assessment outcomes in computing.
Learned	Vocabulary is revisited and relearned. Vocabulary sticks in the children's long-term memory. Lesson by lesson, year by year, children revisit and relearn key computing vocabulary.

EYFS

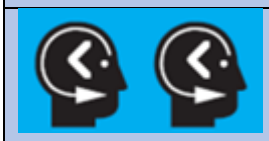
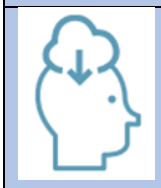
Through an 'explosion of experiences', our youngest computer scientists are exposed to the foundations of their computing learning. Computing knowledge, skills and experiences are provided for through play-based, unplugged (no computer) activities that focus on building children's listening skills, curiosity and creativity and problem solving. High quality, carefully selected books, stories and rhymes are the beating heart of our computing curriculum in EYFS. Computing vocabulary is planned for. Staff are role models in demonstrating computing vocabulary and this is further enhanced in our excellent provision. Children take part in a variety of tasks with digital devices, such as Bee Bots, tablets, laptop and the interactive whiteboard. This develops their understanding of a technologically diverse world and gains familiarity with the foundations of computing learning in EYFS which are linked to Year 1 and beyond.

Both our staff and children are enthusiastic about computing. Through ongoing CPD, we strive to ensure our teachers have expert knowledge of the computing they teach. Our pedagogy is firmly based upon our curriculum intent of embedding concepts into long-term memory so that they are able to be recalled, to ensure substantive and disciplinary knowledge and skills can be applied fluently.

Our 'St. Mary's Quality First Teaching' model ensures that lessons are effectively sequenced so that new knowledge and skills build on what has been taught before and towards defined end points.

Lesson Structure

The sequence of lessons across Computing follows the same structure:

St Mary's Federation of Catholic Schools Lesson structure	
	**Lesson Part 1: Focus on Feedback** This part of the lesson allows for children to revisit their learning from the previous lesson to address any misconceptions or to complete a challenge for retrieval practice or to further deepen their knowledge of a concept. Feedback from the previous lesson should provide children with prompts to address misconceptions to promote resilience or where necessary should provide specific, accurate and clear feedback focusing directly on the misconception.
	**Lesson part 2: Recap** This part of the lesson allows for retrieval practice of previous learnt knowledge, concepts or processes. Depending on the outcome of teacher assessment from the previous lesson, this could also include revisiting a misconception at a whole class level. The task should allow for consolidation of prior learning and promote the application of this to other topics where appropriate.
	**Lesson Part 3: New learning** Vocabulary is introduced or in some cases revisited at the start of the hook. Explicit teaching of new vocabulary is taught here including the teaching of the vocabulary in a context where applicable. Retrieval practice of key vocabulary is also completed. The key learning should be shared with the pupils at the start of this section. Effective teaching modelling is evident during this part of the lesson with teachers clearly modelling their own thinking.
	**Lesson Part 4: Independent Task** The independent task allows for children to practise or apply their learning. Present the new learning small steps. This is a vital opportunity for assessment and all adults in the class provide immediate feedback through live marking.
	**Lesson Part 5: Plenary** The plenary is an essential opportunity to consolidate learning, gauge levels of understanding and develop pupils' skills in explaining, reasoning, and justifying where appropriate. This part of the lesson provides teachers with immediate, formative assessment of the children's understanding from the lesson and any misconceptions which may need to be addressed either within this part of a lesson or at the start of the next lesson.

Impact

We understand that we may not see the true impact of our computing curriculum on our children as it is just the beginning of a lifetime of learning.

Our well-constructed and well-taught computing curriculum leads to great outcomes. Our results are a reflection of what our children have learnt. At St. Mary's, our philosophy is that broad and balanced leads to great outcomes and meeting end points at the end of each key stage. National assessments are useful indicators of the outcomes our children achieve.

We ensure all groups of children are given the knowledge and cultural capital they need to succeed in life. We strive to ensure that our children are equipped with the skills (through a growth mindset approach) to fluently be able to retrieve key facts from their semantic memory.

The quality of our children's work, at every stage, is of a high standard. All learning is built towards an end point and at each stage of their education, we prepare our children for the next stage.

We ensure all our children read to a stage appropriate level and fluency. Reading is the beating heart of our computing curriculum. Through disciplinary literacy in computing lessons, the impact of reading on the children's computational learning is paramount.

The impact of St. Mary's computing curriculum is measured through the following:

· Assessment at the end of each unit of work

· Vocabulary and knowledge are assessed at the end of each lesson and at the end of each sequence

· Pupil voice

· Progress evident in children's books and record of experiences

· Seeking views of parents where appropriate.