St Joseph's Catholic Primary School

Mater Christi Multi Academy Trust

Loving, Living, Learning Together

Computing Progression of Knowledge and Skills EYFS to Year 6

Computer science

Pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming.

Problem solving
Programming
Logical thinking

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Coverage						
• Understand that technology works due to an input that has been made by ourselves. • Giving instructions will make some equipment move.	• 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.		• 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.			
Children give commands/instructions e.g. forward, backwards, go, stop, when using simple software/hardware Make choices about the buttons/icons to press, touch or click on when using simple software/hardware	Moving a Robot • To explain what a given command will do • To act out a given word • To combine forwards and backwards commands to make a sequence • To combine four direction commands to make sequences • To plan a simple program • To find more than one solution to a problem Programming Animations • To choose a command for a given purpose • To show that a series of commands can be joined together • To identify the effect of changing a value • To explain that each sprite has its own instructions • To design the parts of a project • To use my algorithm to create a program	Robot Algorithms • To describe a series of instructions as a sequence • To explain what happens when we change the order of instructions • To use logical reasoning to predict the outcome of a program (series of commands) • To explain that programming projects can have code and artwork • To design an algorithm • To create and debug a program that I have written An Introduction to Quizzes. • To explain that a sequence of commands has a start • To explain that a sequence of commands has an outcome. • To create a programme using a given design.	Sequence in Music • To explore a new programming environment • To identify that commands have an outcome • To explain that a program has a start • To recognise that a sequence of commands can have an order • To change the appearance of my project • To create a project from a task description Events in Action • To explain how a sprite moves in an existing project • To create a program to move a sprite in four directions • To adapt a program to a new context • To develop my program by adding features	Repetition in Shapes • To identify that accuracy in programming is important • To create a program in a text-based language • To explain what 'repeat' means • To modify a count-controlled loop to produce a given outcome • To decompose a task into small steps • To create a program that uses count-controlled loops to produce a given outcome Repetition in Games • To develop the use of count-controlled loops in a different programming environment • To explain that in programming there are infinite loops and count controlled loops • To develop a design that	Selection in Physical Computing • To control a simple circuit connected to a computer • To write a program that includes count-controlled loops • To explain that a loop can stop when a condition is met • To explain that a loop can be used to repeatedly check whether a condition has been met • To design a physical project that includes selection • To create a program that controls a physical computing project Selection in Quizzes • To explain how selection is used in computer programs	Variables in Games • To define a 'variable' as something that is changeable • To explain why a variable is used in a program • To choose how to improve a game by using variables • To design a project that builds on a given example • To use my design to create a project • To evaluate my project Sensing • To create a program to run on a controllable device • To explain that selection can control the flow of a program • To update a variable with a user input

			• To change a given design. • To create a programme using my own design. • To decide how my project can be improved.	• To identify and fix bugs in a program • To design and create a maze-based challenge Algorithms and Debugging • 2D shape drawing debugging • Decomposition unplugged activity • Animated poem decomposition • Scratch tinkering activity • Fossil formation animation • Shapes and crystal flowers repetition	includes two or more loops which run at the same time • To modify an infinite loop in a given program • To design a project that includes repetition Algorithms and Debugging • Abstraction Unplugged • Logical Reasoning Unplugged • Viking Raid • Animation • Bug in the Water Cycle	• To relate that a conditional statement connects a condition to an outcome • To explain how selection directs the flow of a program • To design a program which uses selection • To create a program which uses selection • • To evaluate my program Algorithms and Debugging • Patterns unplugged- reusing recipes • Scratch maths quiz selection • Variables unplugged activity • Scratch maths quiz variables • Solar system simulation	• To use an conditional statement to compare a variable to a value • To develop a program to use inputs and outputs on a controllable device Algorithms and Debugging • Logical number sequences • Crystal flowers- PRIMM1 • Crystal flowers- PRIMM2 • Code cracking 1 of 6 • Code cracking 2 of 6 • Code cracking 3 of 6 • Code cracking 4 of 6 • Code cracking 5 of 6 • Code cracking 6 of 6

Information technology Pupils are equipped to use information technology to create programs, systems, and a	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Coverage						
	• Recognise that a range of technology is used in places such as homes and schools. • They select and use technology for purposes.	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.		• 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.			

St Joseph's Catholic Primary School

Mater Christi Multi Academy Trust

Loving, Living, Learning Together

	Children input commands using the space bar, backspace, enter, letters and numbers on a keyboard on any device (including on a tablet). Input commands using a mouse to control a cursor and use the left click to select options OR use finger control to interact with a tablet (double tap, swipe)	Digital Painting • To describe what different freehand tools do. • To use the shape and line tools. • To make careful choices when painting a digital picture • To explain why I chose the tools I used. • To use a computer on my own to paint a picture • To compare painting a picture on a computer and on paper Digital Writing • To use a computer to write. • To add and remove text on a computer. • To identify that the look of text can be changed on a computer • To make careful choices when changing text • To use bold, italic, underline and C.Ls • To select a word by double-clicking and all of the	Digital Photographs • To use a digital device to take a photograph • To make choices when taking a photograph • To describe what makes a good photograph • To decide how photographs can be improved • To use tools to change an image • To recognise that photos can be changed Digital Music • To recognise, store, manipulate and retrieve digital content. • To use a digital device to take a photograph • To make choices when taking a photograph • To describe what makes a good photograph • To decide how photographs can be improved • To use tools to change an image • To recognise that photos can be changed • To say how music can make us feel	Stop-frame animation • To explain that animation is made up of a sequence of images (drawings or photographs). • To relate animated movement with a sequence of images • To plan an animation • To identify the need to work consistently and carefully • To review and improve an animation • To evaluate the impact of adding other media to an animation Desktop Publishing • To recognise how text and images can be used together to convey information • To recognise how text and layout can be edited. • To choose appropriate page settings	Audio Editing • To identify that sound can be digitally recorded. • To use a digital device to record a sound • To explain that a digital recording is stored as a file. • To explain that audio can be changed through editing. • To show that different types of audio can be combined and played together. • To evaluate choices made. • To evaluate editing choices made. Photo Editing • To explain that digital images can be changed. • To change the composition of an image. • To describe how images can be changed for different uses • To make good choices when selecting different tools	Vector drawing • To identify that drawing tools can be used to produce different outcomes • To create a vector drawing by combining shapes • To use tools to achieve a desired effect • To recognise that vector drawings consist of layers • To group objects to make them easier to work with • To evaluate my vector drawing Video Editing • To explain what makes a video effective • To identify digital devices that can record video • To capture video using a range of techniques • To create a storyboard • To identify that video can be improved through reshooting and editing • To consider the impact of the choices made when making and sharing a video	3D Modelling • To use a computer to create and manipulate threedimensional (3D) digital objects • To compare working digitally with 2D and 3D graphics • To construct a digital 3D model of a physical object • To identify that physical objects can be broken down into a collection of 3D shapes • To design a digital model by combining 3D objects • To develop and improve a digital 3D model Web Page Creation • To review an existing website and consider its structure • To plan the features of a web page • To consider the ownership and use of images (copyright) • To recognise the need to preview pages • To outline the need for a navigation path

St Joseph's Catholic Primary School

Mater Christi Multi Academy Trust

Loving, Living, Learning Together

		text by clicking and dragging. • To explain why I used the tools that I chose • To compare typing on a computer to writing on paper Grouping Data • To label objects • To identify that objects can be counted • To describe objects in different ways • To count objects with the same properties • To compare groups of objects • To answer questions about groups of objects	• To identify that there are patterns in music • To show how music is made from a series of notes • To create music for a purpose • To review and refine my musical pattern on a computer • To save my work and re-open it Pictograms • To recognise that we can count and compare objects using tally charts • To recognise that objects can be represented as pictures • To create a pictogram. • To select objects by attribute and make comparisons • To recognise that people can be described by attributes • To explain that we can present information using a computer	• To add content to a desktop publishing publication • To consider how different layouts can suit different purposes • To consider the benefits of desktop publishing Branching Databases • To investigate questions with yes/no answers • To identify the object attributes needed to collect relevant data • To create a branching database • To explain why it is helpful for a database to be well structured • To identify objects using a branching database • To compare the information shown in a pictogram with a branching database	• To recognise that not all images are real • To evaluate how changes can improve an image Data logging • To explain that data gathered over time can be used to answer questions • To use a digital device to collect data automatically • To explain that a data logger collects 'data points' from sensors over time • To use data collected over a long duration to find information • To identify the data needed to answer questions • To use collected data to answer questions	Flat-file databases • To use a form to record information • To compare paper and computer-based databases • To outline how grouping and then sorting data allows us to answer questions • To explain that tools can be used to select specific data • To explain that computer programs can be used to compare data visually • To apply my knowledge of a database to ask and answer real-world questions	• To recognise the implications of linking to content owned by other people Spreadsheets • To identify questions which can be answered using data • To explain that objects can be described using data • To explain that formulas can be used to produce calculated data • To apply formulas to data, including duplicating • To create a spreadsheet to plan an event • To choose suitable ways to present data

St Joseph's Catholic Primary School

Mater Christi Multi Academy Trust

Loving, Living, Learning Together

Digital literacy 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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Coverage						
	• Children begin to understand that technology can be misused. • To be safe when using a camera, phone • Understand about screen time	• 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 technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact • 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			

St Joseph's Catholic Primary School

Mater Christi Multi Academy Trust

Loving, Living, Learning Together

	Children will recognise technology that is used at home and in school. Understand what a computer is and the different uses of computers i.e. learning, communicating, finding information, playing games etc.	Technology Around Us • Find examples of technology in the classroom. • To identify a computer and its main parts • Name the main parts of a computer: screen, base unit, mouse/trackpad and keyboard • Switch on and log on a computer. • To use a mouse in different ways: to open a programme, click and drag and create a picture • Use a keyboard to type e.g. their name • To use a keyboard to edit text e.g. delete letters and use arrow keys to move the cursor. • Save and open their work • To create rules for using technology responsibly Health, well-being and lifestyle • To give examples of rules to keep myself safe when using	Information Technology Around Us • To recognise the uses and features of information technology • To identify that a computer is a part of information technology • To identify the uses of information technology in the school • To identify information technology beyond school • To explain how information technology helps and benefits us • To explain how to use information technology safely • To recognise that choices are made when using information technology • To move and re-size images. Health, well-being and lifestyle • To recognise how to use information technology responsibly.	Connecting Computers • To explain how digital devices function • To identify input and output devices. • To recognise how digital devices can change the way we work • To explain how a computer network can be used to share information • To explore how digital devices can be connected • • To recognise the physical components of a network Copywrite and Ownership • To explain why copying someone else's work from the internet without permission isn't fair and can explain what problems this might cause. Managing online information • To know how to use key phrases in search engines to	The Internet • To describe how networks physically connect to other networks • To recognise how networked devices make up the internet • To outline how websites can be shared via the World Wide Web (WWW) • To describe how content can be added and accessed on the World Wide Web (WWW) • To recognise how the content of the WWW is created by people • To evaluate the consequences of unreliable content Copy write and Ownership • When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it. • I can give some simple examples of content which I must not use without permission from the owner, e.g. videos, music,	Systems and Searching • To explain that computers can be connected together to form systems • To recognise the role of computer systems in our lives • To recognise how information is transferred over the internet • To explain how sharing information online lets people in different places work together to contribute to a shared project online • To evaluate different ways of working together online Copy write and Ownership • To assess and justify when it is acceptable to use the work of others. • To give examples of content that is permitted to be reused and know how this content can be found online Self image and Identity • To explain how identity online can be copied,	Communication and Collaboration • To identify how to use a search engine • To describe how search engines select results • To explain how search results are ranked • To recognise why the order of results is important, and to whom • To recognise how we communicate using technology • To evaluate different methods of online communication Copy write and Ownership • To use of search tools to find and access online content which can be reused by others. • To know how to make references to and acknowledge sources I have used from the internet. Self image and Identity

		technology both in and beyond the home. Copyright and ownership • To explain why work I create using technology belongs to me and say why. • To save my work under a suitable title / name so that others know it belongs to me (e.g. filename, name on content). • To understand that work created by others does not belong to me even if I save a copy. Privacy and security • To explain that passwords are used to protect information, accounts and devices. • To recognise more detailed examples of information that is personal to someone (e.g where someone lives and goes to school, family names). • To explain why it is important to always ask a	• To recognise some of the choices that are made when using information technology. • To know how guidance and rules help me and know where to go to for help is concerned. Self image and Identity • I can give examples of issues online that might make someone feel sad, worried, uncomfortable or frightened; I can give examples of how they might get help. Privacy and security • To explain how passwords can be used to protect information, accounts and devices. • To explain and give examples of what is meant by 'private' and 'keeping things private'. • To describe and explain some rules for keeping personal information private (e.g.	gather accurate information online. • To explain what autocomplete is and how to choose the best suggestion. • To explain the difference between a 'belief', an 'opinion' and a 'fact. and give examples of how and where they might be shared online, e.g. in videos, memes, posts, news stories etc.	images. Self Image and Identity • To explain how my online identity can be different to my offline identity. • To describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. • To explain that others online can pretend to be someone else, including my friends, and suggest reasons why they might do this	modified or altered. • To know how to make responsible choices about having an online identity, depending on context. Online relationships • To describe some of the ways people may be involved in online communities and describe how they might collaborate constructively with others and make positive contributions. (e.g. gaming communities or social media groups). Online reputation • To describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect.	• To identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online. Managing online information • To describe how things shared privately online can have unintended consequences for others. e.g. screen-grabs. • To explain that taking or sharing inappropriate images of someone (e.g. embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who can help if someone is worried about this. Online reputation • To explain strategies anyone can use

		trusted adult before sharing any personal information online, belonging to myself or others.	creating and protecting passwords). • To explain how some people may have devices in their homes connected to the internet and give examples (e.g. lights, fridges, toys, televisions). Managing online information • To identify that some images are not real/fake				to protect their 'digital personality' and online reputation, including degrees of anonymity. Privacy and Security • To describe how and why people should keep their software and apps up to date, e.g. auto updates