St Bernadette's (Year 1/2) personalised Computing Curriculum

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.

St Mary and St Joseph VC Academy
Computing Curriculum

Year A	Autumn	Spring	Summer
Topic 1	**<u>NCCE: Computing Systems and Networks</u>** <u>Y1 Unit 1 - Technology Around Us</u> Use Of Chromebooks – particularly for Y1, introduce usernames, passwords, log-on details and “digital” passes. **<u>Lesson Sequence</u>** 1. Technology in our classroom 2. Using Computer Technology 3. Developing mouse skills 4. Using a computer keyboard 5. Using a computer responsibly ***<u>Sticky Knowledge</u>*** *<u>Children will know this by the end of the unit:</u>* ● developing understanding of technology and how it can help them ● become more familiar with the different components of a computer by developing their keyboard and mouse skills ● start to consider how to use technology responsibly.	**<u>Oak National Academy</u>** <u>Y1 Unit 2 - Digital writing</u> Various aspects of using a computer to create and manipulate text. Pupils will become familiar with using a keyboard and mouse to enter and remove text. They will consider how to change the look of their text, and will be able to justify their reasoning for making these changes. **<u>Lesson Sequence</u>** 1. Exploring the keyboard 2. Adding and removing text 3. Make changes to text 4. Exploring the toolbar 5. Choosing formatting tools ***<u>Sticky Knowledge</u>*** *<u>Children will know this by the end of the unit:</u>* ● how to use a keyboard and mouse to enter and remove text ● how to change the look of their text ● be able to justify their reasoning for making these changes	**<u>Oak National Academy</u>** <u>Y1 Unit 1 - Digital painting</u> Develop understanding of how to manipulate digital devices by using painting tools. Create digital paintings, gaining inspiration from the work of artists whilst reflecting on preferences when painting with and without the use of digital devices. **<u>Lesson Sequence</u>** 1. Painting using computers 2. Using lines and shapes to create digital pictures 3. Creating digital pictures in the style of an artist 4. Choosing the right digital painting tool 5. Using the paintbrush tool to create digital pictures ***<u>Sticky Knowledge</u>*** *<u>Children will know this by the end of the unit:</u>* ● how to manipulate digital devices by using painting tools

St Mary and St Joseph VC Academy
Computing Curriculum

Topic 2	**Discovery Education: Coding** Level 1A: On the Move Learn that programs execute by following clear instructions. Understand that programs respond to inputs to do different things. **Lesson Sequence** 1. Under the Sea 2. Royal Chase 3. Transport on the Go 4. Another Planet ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● Understand computers follow instructions called codes. ● Understand that codes represent an object or an action. ● How to use code to move objects	**Discovery Education: Coding** Level 1B: Simple inputs Learn to combine start and input events to create more advanced apps and programs using precise instructions. **Lesson Sequence** 1. Burst the bubbles 2. Catch the Fish 3. Magic Castle 4. Emergency! 5. Debugging Simple Inputs ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● Create a simple program that starts events with a click. ● Use code to create a simple program. ● Learn to draw things in the background. ● Debug a simple program.	**NCCE: Programming A** Y1 Unit 3 – Moving a robot Introduce learners to early programming concepts. Explore using individual commands; identify what each floor robot command does; start predicting the outcome of programs. Introduce algorithms. **Lesson Sequence** 1. Buttons 2. Directions 3. Forwards & backwards 4. Four directions 5. Getting there ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● Understand what a given command will do ● Combine four direction commands to make a sequence ● Predict the outcome of a sequence involving up to four commands ● Plan a simple program

St Mary and St Joseph VC Academy
Computing Curriculum

Year B	Autumn	Spring	Summer
Topic 1	**Oak National Academy** Y2 Unit 1 – Information technology in the word beyond school Use Of Chromebooks – particularly for Y1, introduce usernames, passwords, log-on details and "digital" passes. Look at information technology at school and beyond, in settings such as shops, hospitals, and libraries. Investigate how information technology improves our world, and learn about using information technology responsibly. **Lesson Sequence** 1. Introduction to information technology 2. Information technology in school 3. Information technology in the world 4. Benefits of information technology 5. Using information technology safely ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● understanding of what information technology is and be able to identify examples ● identify where they have seen IT in school and beyond ● know how IT improves our world whilst also recognising the importance of using IT responsibly	**NCCE: Computing Systems and Networks** Y2 Unit 5 – Creating Media – Digital Music Make patterns and use those patterns to make music with both percussion instruments and digital tools. Create different rhythms and tunes, using the movement of animals for inspiration. Share creations and compare creating music digitally and non-digitally. **Lesson Sequence** 1. Rhythms & patterns 2. How music can be used 3. Notes & tempo 4. Creating digital music ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● that there are patterns in music ● that a computer can be used to change pitch and duration ● that music is made from a series of notes ● how to use a computer to create a musical pattern using three notes and create music for a purpose	**Oak National Academy** Y2 Unit 2 – Using IT to organise and present data Explore what the term data means and how data can be collected. Explore how attributes can be used to organise data and how data can be presented in the form of pictograms and block diagrams. Use the data presented to answer questions. **Lesson Sequence** 1. Counting and comparing data 2. Entering data 3. Creating pictograms 4. Attributes in data 5. Comparing data ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● What is meant by the term 'data', what data means and how this can be collected in the form of a tally chart ● What is meant by the term 'attribute' and use this to help organise data. ● How to present data in the form of pictograms and block diagram ● How to use the data presented to answer questions

St Mary and St Joseph VC Academy
Computing Curriculum

Topic 2	**Discovery Education: Coding** Level 2A: Different sorts of inputs Learn that one object can be used to control another object, e.g. writing code so clicking a button gives an instruction to make a lorry move. **Lesson Sequence** 1. Fly a helicopter 2. Slug hunt 3. Find my cat! 4. Hungry Migbod 5. Debugging: buttons and instructions ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● Objects can be programmed to do simple actions when a key is pressed. ● Key pressed are an event. ● To develop an understanding of an algorithm. ● Use vocabulary associated with computing. ● To write a simple code	**Discovery Education: Coding** Level 2B: Buttons and Instructions Learn that programs respond to different sorts of inputs, and that the keyboard can be used to control objects on screen, not just by clicking them directly. **Lesson Sequence** 1. Red Riding Hood 2. Key to the race 3. Up in the air 4. Shark attack! 5. Snow White ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● How to write a simple code to move an object ● Code is written in lines and needs to be precise ● To understand what is meant by debugging and to fix a simple code by debugging. ● To independently create and debug a simple code	**Oak National Academy** Y2 Unit 3 – Building sequences in programs Begin to understand that sequences of commands have an outcome and start to make predictions about what these outcomes may be. Use and modify designs to create quiz questions using sequences of code blocks. **Lesson Sequence** 1. Programming sequences 2. Outcomes of sequences 3. Building blocks to create a sequence 4. Programming multiple sprites and backgrounds 5. Designing and creating a quiz program ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions ● How to create and debug simple programs ● Use logical reasoning to predict the behaviour of simple programs

St Cecilia's (Year 3/4) personalised Computing Curriculum

National Curriculum: Lower 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.

St Mary and St Joseph VC Academy
Computing Curriculum

Year A	Autumn	Spring	Summer
Topic 1	**Oak National Academy** Y3 Unit 1 – Computer Networks Use Of Chromebooks – particularly for Y3, introduce usernames, passwords, log-on details and "digital" passes. Explore digital devices, with an initial focus on inputs, processes, and outputs. Introduce computer networks, including devices that make up a network infrastructure and the benefits of connecting devices in a network. **Lesson Sequence** 1. Digital devices 2. Designing a digital device 3. Digital devices for different activities 4. Connecting digital devices 5. Transferring information between devices ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● Understand computer networks including the internet ● how they can provide multiple services, such as the World Wide Web ● how they can provide opportunities for communication and collaboration	**Oak National Academy** Y3 Unit 2 – Stop-frame animation Explore a range of techniques to create a stop-frame animation. Create a story-based animation and add other types of media, such as music and text. **Lesson Sequence** 1. Introduction to animation 2. Creating animations using frames 3. Using storyboards to plan an animation 4. Consistency in frames 5. Reviewing an animation ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● That animation is a sequence of drawings or photographs and be able to relate animated movement with a sequence of images ● To plan an animation and understand the need to work consistently and carefully ● To review and improve an animation ● To evaluate the impact of adding other media to an animation	**Oak National Academy** Y3 Unit 5 – Desktop Publishing Become familiar with the terms 'text' and 'images' and understand that they can be used to communicate messages. Use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Make own template adding text and images to create their own pieces of work using desktop publishing software. Look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world. **Lesson Sequence** 1. Using text & images to communicate 2. Editing text 3. Placeholders in templates 4. Adding content 5. Applying layout in DTP ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● To recognise how text and images convey information ● To recognise that text and layout can be edited ● To add content to a desktop publishing publication

			● To consider the benefits of desktop publishing
Topic 2	**Discovery Education: Coding** Level 3A: Sequence & Animation Learn to make things happen in a sequence, creating simple animations and simulations. **Lesson Sequence** 1. Stepping through space 2. Snail vs spider 3. Alien space race 4. Traffic lights ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● Code can be executed at different times ● How to program a sequence of events to make an object appear and disappear ● How to use time to program events to make a simple animation ● How to design, create and debug a simple program to make an animation	**Discovery Education: Coding** Level 3B: Conditional Events Learn to code with 'if statements', which select different pieces of code to execute depending on what happens to other objects. **Lesson Sequence** 1. Space maze 2. Self-driving car 3. Hungry snake 4. Pufferfish pop 5. Debugging conditional events ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● Use conditional if statements to program a game ● Use different codes for different purposes ● Use computable thinking to help plan and design a program ● Design, make and debug a simple program ● Fix a code to correct an existing program	**Oak National Academy** Y3 Unit 3 – Programming sequence using sound Explore the concept of sequencing in programming through Scratch. The final project is to make a representation of a piano. Apply stages of program design through this unit. **Lesson Sequence** 1. Programming in a block-based environment 2. Programming sprites 3. Sequences 4. Ordering commands 5. Combining code blocks in a sequence ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● To identify that each sprite is controlled by the commands I choose ● To explain that a program has a start ● To recognise that a sequence of commands can have an order ● To create a project from a task description

St Mary and St Joseph VC Academy
Computing Curriculum

Year B	Autumn	Spring	Summer
Topic 1	**NCCE: Computing Systems and Networks** Y4 Unit 1 – The Internet Use Of Chromebooks – particularly for Y3, introduce usernames, passwords, log-on details and "digital" passes. Apply knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. Learn that the World Wide Web is part of the internet. Evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information. **Lesson Sequence** 1. Connecting networks 2. What is the internet made of? 3. Sharing information 4. What is a website? 6. Can I believe what I read? ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● 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 ● To describe how content can be added and accessed on the World Wide Web	**Oak National Academy** Y4 Unit 2 – Audio production Examine devices capable of recording digital audio, identifying the input device (microphone) and output devices (speaker or headphones. Discuss the ownership of digital audio and the copyright implications of duplicating the work of others. Use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. **Lesson Sequence** 1. Recording sound 2. Editing audio 3. Planning a podcast 4. Creating a podcast 5. Behind the scenes ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● To identify that sound can be digitally recorded and to use a digital device to record sound ● To explain that audio can be changed through editing ● To show that different types of audio can be combined and played together	**Oak National Academy** Y3 Unit 4 – Organising data using databases Develop knowledge of what a branching database is and how to create one. Use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Create an identification tool using a branching database. **Lesson Sequence** 1. Yes or no questions 2. Creating a branching database 3. Structuring a branching database 4. Planning a branching database 5. Making a dinosaur identifier ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● What is a database? ● That information is stored in a table made up of fields and records ● That databases are used in real life for everyday systems

	● To recognise how the content of the WWW is created by people ● To evaluate the consequences of unreliable content		
Topic 2	**Discovery Education: Coding** Level 4A: Introduction to variables Learn how computers use repetition and loops to do things over and over again. **Lesson Sequence** 1. Pop game 2. Catch the coconuts 3. Healthy eating 4. Tablet till 5. Debugging variables ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● That computers use variables to count events and keep track of what is going on ● That variables can be set and changed using conditional events	**Discovery Education: Coding** Level 4B: Repetitions and loops Learn how computers use variables to count things and keep track of what is going on, then create simple games which use a score variable. **Lesson Sequence** 1. Bugs in the garden 2. Driving me loopy 3. Astronaut orbit 4. Hot air balloon show ***Sticky Knowledge*** *Children will know this by the end of the unit*: ● The concept of 'repeat' and 'loop' in coding ● How to code efficiently using nested repeat loops	**Oak National Academy** Y3 Unit 6 – Events and actions in programs Explore the concept of repetition in programming using the Scratch environment. Look at the difference between count-controlled and infinite loops, modify existing animations and games using repetition. Design and create a game which uses repetition, applying stages of programming design throughout. **Lesson Sequence** 1. Moving a sprite 2. Program a sprite to move around a maze 3. Use the pen tool in a program 4. Adding features to a program 5. Creating a maze project ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● How use count-controlled loops in a different programming environment ● That in programming there are infinite loops and count-controlled loops ● How to create a project that includes repetition

St Anthony's (Year 5/6) personalised Computing Curriculum

National Curriculum: Upper 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

St Mary and St Joseph VC Academy
Computing Curriculum

Year A	Autumn	Spring	Summer
Topic 1	**Oak National Academy** Y5 Unit 1 – Computer Networks Use Of Chromebooks – particularly for Y5, introduce usernames, passwords, log-on details and "digital" passes. Explore computer systems and how information is transferred between devices. Explore the input, output and processes of a variety of different real-world systems. Discover how information is found on the WWW through learning how search engines work. **Lesson Sequence** 1. Digital systems 2. Computer systems in society 3. Searching the web 4. Selecting search results 5. How search results are ranked ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● That information is transferred between devices. ● How the input, output and processes of a variety of different real-world systems work ● How information is found on the WWW through learning how search engines work.	**Oak National Academy** Y5 Unit 5 - Introduction to vector graphics Discover how to use drawing tools to create vector images. Recognise that images in vector drawings are created using shapes and lines and individual elements are called objects. Use layering, grouping and duplication to create more complex images. **Lesson Sequence** 1. Shape and line tools 2. Creating images using vector graphics 3. Layers and objects 4. Manipulating objects 5. Create a vector drawing ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● That drawing tools can be used to create vector images. ● That images in vector drawings are created using shapes and lines and individual elements are called a objects. ● How to use layering, grouping and duplication to create more complex images.	**Oak National Academy** Y5 Unit 2 -Video production Discover how to create short videos. Develop the skills of capturing, editing, and manipulating video. Take their ideas from conception to completion and evaluation. **Lesson Sequence** 1. What is a video? 2. Filming techniques 3. Using a storyboard 4. Planning a video and script writing 5. Importing and editing video ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● How to create short videos. ● How to capture, edit and manipulate video footage.

St Mary and St Joseph VC Academy
Computing Curriculum

Topic 2	**Discovery Education: Coding** Level 5A: Speed, Direction & Co-ordinates Learn how computers use numbers to represent things such as how fast things are moving, and where they are. **Lesson Sequence** 1. Faster & Slower 2. Speedy simulation 3. Sailing the Seas 4. Parachuting cows 5. Debugging ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● How to use numbers to control the speed of an object ● How to use co-ordinates to control the position of an object	**Discovery Education: Coding** Level 5B: Random numbers and simulation Learn how computers can generate random numbers and how these can be used in simulations. **Lesson Sequence** 1. Racing at random 2. Caterpillar catcher 3. Cross the road 4. Ping pong 5. Pinball ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● That the value of a variable can be generated randomly in response to an event or timer ● How to manipulate randomised code and conditional events	**Oak National Academy** Y5 Unit 4 -Flat-file databases Examine how a flat-file database can be used to organise data. Use tools to order and answer questions about data. Create graphs and charts from collected data to solve problems. Use a real-life database to answer a question, and present work to others. **Lesson Sequence** 1. Creating a paper-based database 2. Computer databases 3. Using a database 4. Using search tools 5. Comparing data visually ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● How to select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a program ● How to collect, analyse, evaluate and present data and information

St Mary and St Joseph VC Academy
Computing Curriculum

Year B	Autumn	Spring	Summer
Topic 1	**Oak National Academy** Y6 Unit 1 - Communication and the internet Use Of Chromebooks – particularly for Y5, introduce usernames, passwords, log-on details and “digital” passes. Explore how data is transferred over the internet. Examine addressing and the makeup and structure of data packets. Investigate how the internet facilitates online communication and collaboration and how to communicate responsibly on the internet. **Lesson Sequence** 1. Internet addresses 2. Data packets 3. Working together 4. Shared working 5. How we communicate ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● How data is transferred over the internet ● How the internet facilitates online communication and collaboration ● How to communicate responsibly on the internet	**Oak National Academy** Y6 Unit 2 - Web page creation Discover how to create websites for a chosen purpose. Identify what makes a good webpage and use this information to design and evaluate a website.Consider copyright and fair use of media, the aesthetics of the site, and clear navigation. **Lesson Sequence** 1. Features of a good website 2. Web page layout 3. Copyright of images 4. Device compatibility 5. Follow the breadcrumbs ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● How to create websites for a chosen purpose. ● What makes a good webpage ● How to consider copyright and fair use of media, the aesthetics of the site, and clear navigation	**Oak National Academy** Y6 Unit 3 - Communication and the internet Explore the concept of variables in programming through the development of games. Investigate what variables are and relate them to real-world examples of values that can be set and changed. Use variables to create a simulation of a scoreboard. **Lesson Sequence** 1. Introducing variables 2. Updating and changing values in a variable 3. Improving a game 4. Design a game that uses variables 5. Design to code ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● The concept of variables in programming ● How to use variables effectively in programming.

St Mary and St Joseph VC Academy
Computing Curriculum

Topic 2	**Discovery Education: Coding** Level 6A: More complex variables coding Learn to use variables in more complex ways, and to manipulate inputs to create useful outputs. **Lesson Sequence** 1. Shape shifting 2. Pop challenge 3. Toy shop till 4. Stop watch 5. Debugging ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● How to use variables to change properties of shapes in a program ● WHat is meant by boolean values ● How to use boolean values	**Discovery Education: Coding** Level 6B: Object properties Learn more about how computers use property values and parameters to store information about objects. **Lesson Sequence** 1. Don't feed the birds 2. Rocket blaster 3. Football fun 4. Sheepdog 5. Golf game ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● How to combine co-ordinates, conditional events, random numbers and variables to achieve an outcome ● How to detect properties of an object ● How to pass the properties of an object to another object	**Oak National Academy** Y6 Unit 5 - 3D modelling Discover how computers can be used to produce 3D models. Work in a 3D space, moving, resizing, and duplicating objects. Create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. **Lesson Sequence** 1. Introduction to 3D modelling 2. Modifying 3D objects 3. Make your own name badge 4. Planning a 3D model 5. Make your own 3D model ***Sticky Knowledge*** *Children will know this by the end of the unit:* ● How computers can be used to produce 3D models.