

St. Dominic's School KS2 – KS4 Subject Overview: Computing

Curriculum Intent: To ensure that all pupils and students are able to access computers to understand their place in the world, safely and independently. To develop IT skills to enable our pupils and students to work successfully and efficiently future careers.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Core Values	Myself		My Context		The Wider World	
FBV Focus	I Am Me	I Matter	I Am Unique	I Belong	I Am Safe	I Am Prepared
Skills for Independence	Individual Liberty Democracy		Mutual respect and tolerance Democracy		Rule of law Democracy	
Skills for Learning	Self-Care	Functional Motor	Sensory Modulation	Independent Living	Personal Safety and Welfare	Organisation and Preparation for Work
Skills for Communication	Self-Managers	Independent Enquirers	Reflective Learners	Team Workers	Effective Participators	Creative Thinkers
Skills for Self-Development	Attention & Listening	Understanding	Narrative Skills	Vocabulary	Relationships	Play and Social Interaction
Skill for Enrichment	Positive Attitudes	Emotional Resilience	Ambitious Goals	Leadership and presentation of self	Staying Safe	Decision making and planning for the future
KS2	Spirituality	Morality	Social Understanding	Citizenship	Cultural Understanding	World of Work
KS2	<p>Computing Systems and Networks – Technology Around Us.</p> <p>Develop learners' understanding of technology and how it can help them. Pupils will become more familiar with the different components of a computer by developing their keyboard and mouse skills, and also start to consider how to use technology responsibly.</p> <p>Looking at how people may socialise in positive and negative ways online.</p>	<p>Computer Inputs and outputs.</p> <p>Pupils learning about the range of different inputs and outputs, and identifying the differences. Selecting the correct input/output for given scenarios and trying out a range of inputs and outputs.</p>	<p>Creating Media – Digital Painting</p> <p>Pupils explore the world of digital art and its exciting range of creative tools with your learners. Empower pupils to create their own paintings, while getting inspiration from a range of other artists. Conclude by asking pupils to consider their preferences when painting with, and without, the use of digital devices. Painting digitally means that pupils can easily correct mistakes and trace existing graphics to [produce their own.</p>	<p>Creating Media – Digital Writing</p> <p>Promote learners' understanding of the various aspects of using a computer to create and change text. Pupils will familiarise themselves with typing on a keyboard and begin using tools to change the look of their writing, and then they will consider the differences between using a computer and writing on paper to create text.</p>	<p>Creating Media – Stop frame animation</p> <p>During this unit, pupils will use a range of techniques to create a stop frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text.</p>	<p>Sequential Programming</p> <p>Using Scratch to create simple games from algorithm tile in sequence, introduction to motion and variables. Pupils can test how the program behaves when they adjust code.</p>
Reading	Re-telling – pupils giving presentations to the class about their favourite technology.	Literal questioning – around input devices and output devices.	Matching the type of image with the image.	Inference – suggesting things in a newspaper article without saying them	Stop frame animation of a sentence	Inference – looking at code and thinking about what the role of a forever loop is.
Writing	Producing their own presentations.	Using spellcheck to help correct grammar.	Describing the images they have produced.	Punctuation , using spell checker and for their written pieces	Looking at associated verbs with producing animation	Vocabulary – Learning definition of basic programming keywords such as variables.
Number	Looking at numbers of devices in the world.			Describing sections of a page layout by fraction.	Measures of time with movement	Data Handling = storing data as a variable
Year 7	Sequential programming. Using Scratch to create simple games from algorithm tile in sequence, introduction to timers and delays.	Information Technology - Using and creating databases Creating Superheroes top trumps (printing and testing). Pupils encouraged to play their games with one another to test them. Building a basic database of Superheroes.	Information Technology 3D world modelling. Map and world creation. Quick and easy to achieve. Complex game, using terrain tool and adding sprites which are controlled by sequential programming.	Visual programming Scratch Basic Satisfaction of understanding basic coding blocks. Easy and clear to use, with a visual output.	BBC Microbits – introduction. Exciting technologies. Hardware and software. Easy to use engaging coding interface.	Creating and using digital graphics – Information Technology. Creating animations, animated GIF's, logos and displaying on a webpage for a business enterprise.

Reading	Re-telling – explaining visual code	Literal questioning.	Prediction – by adjusting the properties of sprite with an expectation of how they will change, e.g. speed.	Inference – looking at code and explaining how it might operate.	Inference - looking at code and explaining how it might operate.	Evaluation – peer and self-assessment of digital graphics produced.
Writing	Combing the “Forever” and “IF” blocks in scratch – forever, if ...	Writing character names and stats, data entry	Standard English and formality / functions of sentences	Punctuation	Verb forms/tenses and consistency	Associated vocabulary with graphic editing tools
Number	Number and Place Value	Addition and Subtraction	Multiplication and Division	Using decimal number to control motion more precisely	Measures of time through timers	Data Handling
Year 8	Selection Programming. Having experience Kodu already pupils now developing more advanced games using events and triggers (IF statements). Demos by teacher with tutorials to follow by pupils. Pupils can try things out and test them.	Computer networks and networking. Pupils will learn about IP addressing, and how data is sent across the internet. Devices such as switches, HUBs and servers will be illustrated in network diagrams.	Using scripted programming languages. Pupils will be using Javascript to code their Micro bits and creating more advance programs.	Software Lifecycle. Pupils to design, plan and develop their own simulator. Pupils creating a basic Ecosystem simulator using random number generator.	How PC's work. Demos of Building a PC in class Understanding PC components. 'Hands on' approach to learning.	E-Safety at home, in the workplace and at school. Engagement Factor. Pupils will create and present their own ideas and findings at the end of the unit.
Reading	Re-telling – explaining what they have done using screenshot annotations.	Literal questioning around devices and services used to provide internet to their homes.	Prediction – Looking at visual codes and predicting what it will do.	Inference – Using a simulator to infer what might happen	Inference – working out what might happen if certain components were 'slower'	Evaluation of their own online personality and behaviour
Writing	Sentences and Clauses – Instruction written for their game.	Nouns (device names). Verbs (role of device).	Adjective – describing what the code blocks do.	Possession and Speech – presenting to class their own simulator idea	Cohesion, organisation and presentation	Punctuation – pupils writing their own online safety rules
Number	Number – Using repeat and countdowns.	Algebra	Reasoning, Multiplication and Division – making a simple calculator with JavaScript	Proportions and Proportional Change – using percentages to show proportions in their simulator	Geometry	Data Handling – looking at data for number of worldwide occurrences of computer misuse
Year 9	Data representation Pupils learning about how binary numbers are used in computers to represent information such as number and image	PC Hardware Learning about the role each component plays with a computer. Different types of memory (Primary, secondary), the function of the CPU and motherboard.	Introduction to Python. Creating relevant and useful programs. Creating and using variables.	Using Logic Gates and creating truth tables. Pupils learning how the AND OR NOT gates work, looking at inputs and outputs, additionally how to generate truth tables from inputs and outputs.	Creating and interpreting Algorithms. Pupils looking at algorithm,symbols and testing logical flow through decision boxes. Introduction to bubble sort.	Pupils creating a basic Ecosystem simulator using random number generator.
Reading	Retelling - Encoding and decoding messages to send to peers.	Literal Questioning - around main role of each PC component.	Prediction – Looking at algorithms and pseudocode and suggesting what code may do.	Inference – How would a OR gate truth table look.	Inference - looking at code and explaining how it might operate.	Evaluating the work that they have produced.
Writing	Plan and organise – choosing a cypher and organising the encoding of a message.	Nouns, Verbs and tenses – Names of PC components.	Describing how their code workswith annotations on screenshots	Possession and Speech.	Cohesion, organisation and presentation.	Punctuation – Correctly used in evaluation.
Number	Using the Base 2 system to convert binary numbers into denary numbers.	Algebra	Reasoning, Multiplication and Division.	Proportions and Proportional Change.	Geometry	Data Handling of the variables used in simulation.

Year 10	Testing and understanding Networked technology Troubleshooting systems in lessons. HTML & Javascript Coding.	Data flow through a PC. Pupils learning about the fetch decode execute cycle, looking at the role.	Computer Software, operating systems and utility software. Functions of operating systems, comparison. Class debate on pros and cons of each.	Von Neumann architecture. Little Man Computer – CPU & RAM simulator program. Creating a character set using 5 bit code. Binary Games.	Creating Database queries with SQL. Creating advance database with Validation, forms and queries. Learning about SQL with test datasets.	Engagement Factor. Pupils go through recent news stories of computer failures and for each case answer the questions: What was the failure? Why did it happen? What could be done to prevent it? They could work in groups, each group on one story and reporting back to the class.
Reading	Re-telling – explain some of the PC problems they have come across.	Literal Questioning – Describe each part of the fetch execute cycle.	Prediction – What might the future hold for operating systems.	Inference – Using LMC to see how memory is utilised by a CPU.	Inference – looking at example and SQL and suggesting what it will do.	Evaluation of computer advantages and disadvantages in society.
Writing	Plan and organise – producing trouble shooting algorithms and testing them.	Narrate and describe – Producing and delivering presentations for the FDE cycle.	Extend – looking at the 7 Layer OSI model.	Summarise – summarise the impact of the Von Neumann architecture on the world of computing.	Adapt – changing and correcting SQL commands.	Edit and revise – how could these things be avoided in the future?
Number	Number	Algebra	Reasoning, Multiplication and Division	Proportions and Proportional Change.	Geometry	Data Handling of statistics associated with computer failures.
Year 11	Controlled assessment preparations. Looking at specification documents for software. Creating algorithms and pseudo code for some simple programs. Using the design to inform the implementation.	Controlled assessment. Pupils issued the controlled assessment with interspersed teaching dictated by nature of tasks set by exam board. Recapping on planning and design phase including algorithms. This controlled assessment is very good practise for the software exam paper.	Issues and Legislation There are a number of different issues surrounding technology and these issues can be categorised as ethical, legal, privacy, environmental and cultural. This unit explores examples of a range of issues. Mock exam preparations. Mock exam to inform topic areas to prioritise for revision.	Computational Thinking Computational thinking is an approach to problem solving. Computational thinking is about taking a complex problem and being able to use several 'computation thinking techniques' (abstraction, decomposition, pattern recognition and algorithmic thinking). Pupils will learn to fully understand the problem and create an effective solution.	Engagement Factor. Boosting grades by focusing on revision lessons on identified weaknesses. Working on exam technique.	Summer Holidays
Reading	Re-telling – have pupils explain what they think the task set requires them to do.	Literal Questioning on some of the keywords that are associated as reminders to use them in their reports.	Prediction for future laws and legislation that will/may be required.	Inference – reading user problems and applying the process of abstraction.	Inference – exam technique (past paper question expecting pupils to make inferences).	Summer Holidays
Writing	Plan and organise of the initial design spec report.	Pupils presenting to the class their understanding of the task.	Extend by making predictions based on technological advances in the future.	Summarise user requirements to form coincide design specification.	Adapt exam technique to face questions that initially look too complex.	Summer Holidays
Number	Number – Checking understating of datatypes, e.g. Float/Integer.	Algebra – Using variables to update and store numbers.	Reasoning behind computer legislation.	Proportions – understanding the scope of an IT problem.	Geometry.	Summer Holidays

BTEC	<p>Students design a business spreadsheet.</p> <p>Students using the design specification they have produced to develop the spreadsheet.</p> <p>Once pupils have completed the spreadsheet they test, evaluate and reflect upon the project in a written report.</p>	<p>Applications and features of digital Animation products.</p> <p>Designing a digital animation product.</p>	<p>Students design and implement their own digital portfolio (website) showcasing their work and skillset. This will showcase the work they have produced in the previous two units.</p> <p>Pupils look at various IT careers and think about the audience and purpose of their eportfolio based on this.</p>	<p>Investigating online services and online communication.</p> <p>Investigating components of the internet and how digital devices exchange and store information.</p>	<p>Completing outstanding pieces of work to ensure all pupils are meeting expected targets, additionally adding to work produced to exceed pupil targets.</p>	Submissions
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