

GRANVILLE ACADEMY



Curriculum Guide for ICT

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1. Curriculum Rationale

2. What students will learn in ICT



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1. INTENT

The objective of the IT/Computing curriculum is to enable student to have a clear knowledge of computer systems looking at hardware and software. This will enable the students to take their knowledge into the work place as computers are used in all walks of business life. In year 7 the SOW looks at e-safety which will give further knowledge following from lessons taught in year 6. They are introduced to programming language and understanding how to use the internet. By the end of year 7 the students should have a good round knowledge of spread sheets, programming code and an understanding of how systems work for leisure and industry. Critical Thinking is developed as they identify appropriate coding structures for solutions, collaboration to discuss the efficiencies of code and identify errors. Students can be Creative with their solutions as there are multiple methods to arrive at the solution, with theory work Students can demonstrate their understanding in a variety of ways. Challenge is prevalent throughout the course; Students investigate a deeper understanding of WHY or HOW the computer functions or use professional methods to create re-usable, maintainable code.

Throughout year 8 and year 9 the computing knowledge increases with networks and different types of programming language introduced. These are all covered within the national curriculum and are to help toward a GCSE in computer science or a GCSE in IT.

Each key stage 3 class will have two hours of IT per week this will be able to reflect the amount of subject knowledge which is delivered. Due to computing and IT always changing but is a constant within industry all students will have a good understanding and knowledge of the future technology which has to include coding and IT skills. The SOW for KS3 show a range of topics which will enable them to continue with their studies in computer science or IT but will also give them a good structured knowledge of IT/Computing skills ready for the work place.

2. IMPLEMENTATION

The way in which each of the topics are delivered depends on the topic but overall the teacher will demonstrate and explain the uses of the software and benefits and the students will copy and reproduce work following from the demonstration. In year 9 the top sets will be introduced into more programming language as they would be suitable for the GCSE computer science course where as the lower sets would be encouraged to go down the IT route which will give them an IT qualification. During year 7 and 8 the whole cohort will be doing a mixture of IT and computing units to enable them to have a greater understanding of the subject. In each year we revisit e-safety as it is an ongoing issue with the students and making sure they always remember how to use the internet safely.

All topics can be reduced due to particular students and equally deepened for more able students.

The impact of the SOW is to make sure the students have a good knowledge of IT/computing. Students come to an IT lesson thinking they know everything about computers but the only thing they know is how to open apps send messages and look at the internet. What they don't know is how the computer works how it is connected to the internet or a network within school how they can design a system of their own or how they could store lots of information in lots of different ways the SOW tells them all that. The national curriculum states all the topics that have to be covered and the SOW maps it easily.



3. Curriculum Map



Year	Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2	
7	Assessment 1		Assessment 2		Assessment 3							
	E-Safety	Search the web	Algorithms	Understanding Computers	First Steps in Small Basics	Information Systems	Spreadsheets	Branching Stories				
	8 Lessons	8 lessons	5 lessons			7 lessons		5 lessons				
	Digital Literacy	Digital Literacy		Computer Science		Computer Science						
	word publisher		PG Online??? Lesson 1 Elements of a computer system Lesson 2 The CPU Lesson 3 Understanding binary Lesson 4 Binary addition Lesson 5 Storage devices Lesson 6 Convergence and new technologies									
8	E-Safety	HTML	Cryptography	Networks	Databases	Python /Small basic	Sound manipulation	Animation in Flash	Graphics			
	Assessment 1		Assessment 2		Assessment 3							
	8 Lessons	8 lessons	7 Lessons		7 lessons	12 lessons		10 lessons	8 lessons			
	Digital Literacy	Comp Sci.	Comp Sci.		Comp Sci.	Computer Science		Information technology	Information technology			
	PG Online Unit Lesson 1 HTML Lesson 2 CSS Lesson 3 Design Lesson 4 Development Lesson 5 Creating a web form Lesson 6 Assessment		PG Online Unit Lesson 1 The Internet Lesson 2 Connectivity Lesson 3 Topology Lesson 4 Client-server networks Lesson 5 Encryption Lesson 6 Assessment	PG Online Unit Lesson 1 Introduction to databases Lesson 2 Creating a database table Lesson 3 Queries Lesson 4 Input forms	PG Online Unit Lesson 1 The basics Lesson 2 Loops Lesson 3 Lists Lesson 4 Procedures Lesson 5 Functions Lesson 6 Assessment		PG Online Unit Lesson 1 Frame-by-frame animation Lesson 2 Motion tweening Lesson 3 Text, buttons and ActionScript Lesson 4 Planning an animation	PG Online Unit Lesson 1 Introduction to vector graphics Lesson 2 Bitmap graphics Lesson 3 Conveying meaning				

					Lesson 5 Creating a report Lesson 6 Finishing and testing Unit assessment			Lesson 5 Adding sound effects Lesson 6 Publishing an animation Unit assessment	Lesson 4 Effects and enhancements Lesson 5 Adding text Lesson 6 Assessment and review
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National Curriculum Link	Year 7	Year 8	Year 9
Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.			
Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem			
Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions.			
Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal].			
Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.			
Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.			
Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.			
Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.			
Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.			

Year 10	Computer Science	Exam board: OCR Computing	Specification code: J276			
Half Term	1	2	3	4	5	6
Focus/Refer to:	2.1 Computational Thinking	Binary Search	2.4 Logic	2.6	2.3 Remainder	Programming Project
J276/02	PseudoCode	Linear Search	2.5	2.3 Begin		20 hours
	Flow Diagrams	Bubble Sort				
		Merge Sort				
	Sequence	Insertion Sort				
	Selection					
	Iteration	Remaining 2.2				
	Variables					
	Data Types					
	Logical Operators					
	Computer Mathematics					
Recall Checks		Coding Tasks	Coding Tasks	Coding Tasks	Coding Tasks	
	Topic Quiz	Topic Quiz	Topic Quiz	Topic Quiz	Mock Exam Paper 2	
		Previous Quiz		All Topics Quiz		



4. Assessment Plan



KS3

At the end of each topic a small test is given to check knowledge this is then marked and discussed with peers to show understanding. The formal assessments will be 3 per year and these are based on a range of topics that have been covered. The formal assessment will be marked and feedback given allowing the student time to evaluate their work and make changes. The impact of their growing knowledge will be easily shown as their confidence gets better with different software's and applications. The assessments will then be moderated either internally or cross-Trust, and directly influence students' progress rank. IT/Computing is a cross curriculum activity as in many lesson IT is used. The better the understanding of the different software's also helps other subjects when they have to create projects , graphs or CV's.

The curriculum is differentiated for all ability ranges with Students encouraged to attempt challenge tasks.

Drop in sessions at lunchtime or afterschool offer Students the opportunity to enhance their understanding of ICT.



5. Specialist Vocabulary



KS3 Computing	GCSE Computer Science	OCR Creative iMedia
Digital literacy Formatting Consistency Hardware and software Algorithm Pseudo code Sequence Selection Iteration Formula Bitmap Vector	Von Neumann architecture Logic gates Abstraction Iteration Sequence Decomposition Algorithm Application Program Interface Attribute Bandwidth Bit Rate Bubble Sort Cipher Text Client Client Server System Database	Pre production documents Visualisation diagram Mind map Mood board Script Assets Health and Safety Legislation Client requirements Target audience House style Work plan Copyright Data protection Version control

	Database Management System Decryption Embedded Systems Encryption Float / Real Human Computer Interface Interpreter Linear Search List / Array Maintenance Overflow Peer to peer network Phishing Humans as the "weak link" Primary Key Field Record Integer String Character Sample Rate SQL WHERE FOR WHILE RANGE LEN IF ELIF ELSE Router Server ALU Cache RAM ROM MDR MDA Control Unit Topology RING BUS STAR MESH CPU Motherboard Primary Storage Secondary Storage Volatile Non-Volatile Python Idle Compiler Interpreter Translator Assembler Assembly	
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Key Words are emphasised at the start of the lesson.

Understanding of keys words is reinforced by recaps of previous learning.

Students are encouraged to use the words in the annotation of their work and evaluations

It is the ambition of the faculty to use social media to share key words and concepts. The faculty Instagram has been well received by Students. Opportunity for digital leaders/most able in Year 9 and 10 to produce content on the iPads using Clips/Movie maker.

6. Cultural Capital



7. Homework and independent learning



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Homework helps to reinforce learning and develop good study habits and life skills. Homework also allows parents to be involved with their child's learning.

Homework and the regularity there of at KS3 is dependent on the topic.

USEFUL GCSE ICT REVISION WEBSITES

Computer Science Revision

<https://www.computerscience.gcse.guru/>

Revision Quizzes for GCSE IT

<http://www.school-resources.co.uk/GCSEITRevisionQuizzes.htm>

BBC - Schools - GCSE Bitesize Revision - ICT

<http://www.bbc.co.uk/schools/gcsebitesize/ict/>

ICT GCSE = Recommended ICT revision site.

<http://www.ictgcse.org.uk/>

Top Sites for: GCSE ICT revision

<http://onebigworld.co.uk/ukdirectory/gcse-ict-revision.html>

GCSE ICT Theory Index Page

<http://www.klbschool.org.uk/ict/gcse/theory/>

How to 'revise'

You need to make your revision time as productive as possible. Just reading does not tend to be very effective. Making revision notes, writing topic summaries, attempting questions and then checking the answers are much better strategies. Writing or typing something forces you to concentrate and your mind is less likely to wander off your revision onto something you would rather be doing.