

KS3 ICT and Computer Science Subject Information ICT and Computing

Subject Title	ICT and Computing	
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Year	Course Outline	What you can do as a parent to support your child throughout this course?
<h1>7</h1>	Term 1 – Topic 1: Using Computers Safely Effectively and Responsibly	
	This is a theoretical unit covering the necessary basic knowledge to use computers safely, effectively and responsibly. Pupils begin by looking at file management and security. The unit then moves on to e-safety (cyber-bullying, phishing etc.), and online profiles to give pupils a better understanding and awareness of using social media. The functionality and operation of email and search engines and how to use them effectively are covered, and a final lesson includes a multiple choice test on the contents of the unit and basic computer use.	Discuss issues with your children around online dangers, the need to be organised and watch the news/read newspapers for interesting news articles on ICT related issues.
	Term 1 – Topic 2: Control Systems with Flowol	
	The unit is subdivided into six learning hours that can be spread across six lessons in order to fit with most school timetables and the needs of different groups of pupils. It is a practical unit covering the principles of producing control and monitoring solutions using a flowchart-based interface (Flowol 4). Pupils will start by producing systems that use simple loops and basic outputs, and then move on to look at systems that have multiple inputs and outputs. They will refine their solutions using subroutines and variables.	Parents can help their children by exploring flow diagrams and placing these in real life context i.e. Breaking down something like making a cup of tea into its individual components and decisions that have to be made – Has kettle boiled? Yes pour water into, No wait until boiled.
Term 2 - Topic 1: First Steps in Small Basic		
This unit is an introduction to programming in a textual language designed to make programming easy and approachable for beginners. It starts by introducing Turtle graphics, leading to the use of variables and For...EndFor loops. Simple programs using the Text window are used to introduce input, output and selection. Pupils will get used to these programming statements while having fun producing coloured graphics and making a simple screensaver. They will learn the importance of writing statements accurately, documenting their programs and finding out for themselves in a very visual way how different program statements work.	Encourage your children to download Small Basic (it's free from the Microsoft website and will run on home PC's not Macs or other non-Windows machines). Have them explore programmes that are out there and work through tutorials.	

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Term 2 - Topic 2: Spreadsheet Modelling	
<p>The unit is subdivided into six learning hours that can be spread across six or more lessons in order to fit with most school timetables and the needs of different groups of pupils. It is a practical, skills-based unit covering the principles of creating and formatting basic spreadsheets to produce and use simple computer models. It is suitable for pupils who have a basic knowledge of spreadsheets including cell references, simple formulae and formatting, although these topics are revised in the first lesson, making it also suitable for pupils new to spreadsheets. The unit is centred on creating a financial model for a TV show. Pupils start by looking at different types of model and then use basic spreadsheet techniques to create and format a simple financial model to calculate the expected income from viewers' voting. The model is then extended to include sales from merchandising, with the introduction of "what if" scenarios. Finally the pupils create a seating plan, book seats and calculate income from seat sales. Spreadsheet features covered include SUM, MAX, IF and COUNTIF functions, cell naming for absolute referencing, conditional formatting, validation, charting and simple macros.</p>	<p>Encourage your children to explore maths and algebraic problems as well as using spreadsheets to complete formula, maybe create an incomes and outgoings spreadsheets together to help your children develop an understanding of Spreadsheets and formula used as well as key words like expenditure, profit, revenue.</p>
Term 3 – Topic 1: Adventure Game	
<p>Students develop a product (game) for Y6 students using no linear presentation methods. This involves designing, evaluating and refining the product to ensure it suitable for the audience. They will gain skills in creating a product for a set audience, pitching a product through designs and evaluating and refining products. In addition they will gain ICT skills and software skills in a fun and dynamic way.</p>	<p>Students develop a product (game) for Y6 students using nonlinear presentation methods. This involves designing, evaluating and refining the product to ensure it is suitable for the audience. They will gain skills in creating a product for a set audience, pitching a product through designs and evaluating and refining products. In addition they will gain ICT skills and software skills in a fun and dynamic way.</p>

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Term 1 – Topic 1: Understanding Computers

The unit is subdivided into six learning hours spread across six or seven lessons in order to fit with most school timetables. It is a theoretical unit covering the basic principles of computer architecture and use of binary. Pupils will revise some of the theory on input and output covered in previous learning and continues to look at the Input-Process-Output sequence and the Fetch-Decode-Execute cycle through practical activities. Pupils will then look at some simple binary to decimal conversion and vice versa, and learn how text characters are represented using the ASCII code. This will be followed by some simple binary addition. Pupils will learn more in depth how storage devices represent data using binary patterns and physically save these patterns. Finally, they will look at a brief history of communication devices, how new technologies and applications are emerging and the pace of change.

Research different parts of a computer, the binary number system. Research the history of computing. There are some excellent resources on the internet that would be useful to look at to help with this topic.

Term 1 – Topic 2: Database Development

The unit is subdivided into six learning hours spread across six or seven lessons in order to fit with most school timetables. It is a practical unit covering the basic theory, creation and use of a single-table database. Pupils will start by looking at an existing database, learning how to add records and make queries. The skills will allow students to solve a crime using their new database skills.

It is important that students are taught what a database is, this does not have to be computer based – The yellow pages, address books are all databases. Concepts and keywords such as record, field, file, primary key and data types can all be looked up prior to the start of the topic.

Term 2 - Topic 1: Games Programming in Scratch

In this unit pupils will be introduced to the Scratch programming environment and begin by reverse-engineering some existing games. They will then progress to planning and developing their own games, learning to incorporate variables, procedures (using the Broadcast function), lists and operators. They should be able to create a fully working game with lives, scoring and some randomisation of objects. Finally they will learn to test and debug their programs.

Scratch can be downloaded for free from the MIT website and there are numerous tutorials on the internet, YouTube is a great place to follow tutorials and start building games and getting used to the Scratch environment before the unit begins.

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Term2 - Topic 2: Spreadsheet Modelling

The unit is subdivided into six learning hours that can be spread across six or more lessons in order to fit with most school timetables and the needs of different groups of pupils. It is a practical, skills-based unit covering the principles of creating and formatting basic spreadsheets to produce and use simple computer models. It is suitable for pupils who have a basic knowledge of spreadsheets including cell references, simple formulae and formatting, although these topics are revised in the first lesson, making it also suitable for pupils new to spreadsheets. The unit is centred on creating a financial model for a TV show. Pupils start by looking at different types of model and then use basic spreadsheet techniques to create and format a simple financial model to calculate the expected income from viewers' voting. The model is then extended to include sales from merchandising, with the introduction of "what if" scenarios. Finally the pupils create a seating plan, book seats and calculate income from seat sales. Spreadsheet features covered include SUM, MAX, IF and COUNTIF functions, cell naming for absolute referencing, conditional formatting, validation, charting and simple macros.

Encourage your children to explore maths and algebraic problems as well as using spreadsheets to complete formula, maybe create an incomes and outgoings spreadsheets together to help your children develop an understanding of Spreadsheets and formula used as well as key words like expenditure, profit, revenue.

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Term 1 – Term 2: Functional Skills

In year 9 students are given a project to complete, this is broken into two main parts functional skills and web development. Pupils will create/complete a series of task for a fictional company; this includes promoting the company via publicity materials, creating business documents for the company such as letterheads, spreadsheet modelling and a website. This project hopefully gives students a good grounding for what they may be asked to do in a real life situation if they worked in ICT or a marketing environment or even setting up their own business. It also gives them a good grounding of the majority of ICT applications encountered in most environments. The functional skills element looks at the office packages available and how to use them; this section of the course closely matches the functional skills courses that exist, which cover the elements employers expect employees to be able to tackle in the workplace.

Work with your children to develop professional documents, if you are writing a letter ask them to help, if you use spreadsheet explain these to your children. Explore corporate identity with your children – look at letters from companies and other correspondence. If you run your own business explain the software you may use etc....

Term 2 – Term 3: Web Development

This follows on from functional skills and students create a website to accompany the business which they designed materials for in the functional skills section. They will gain skills in specialist web development software along with HTML code used to generate websites.

Look at websites for businesses and how these are set out – What do they include? Why are colours important? Etc.... Download the free trial of Dreamweaver from Adobe. This will give students a chance to practice skills learnt in class by building their own websites at home using the same software as used in school.

Term 3– Topic 2: Introduction to Python

The unit is subdivided into six learning hours spread across six lessons in order to fit with most school timetables. It is an introduction to Python, a powerful but easy-to-use high-level programming language. Although Python is an object-oriented language, at this level the object-oriented features of the language are barely in evidence and do not need to be discussed. The focus is on getting pupils to understand the process of developing programs, the importance of writing correct syntax, being able to formulate algorithms for simple programs and debugging their programs. The pupils' final programs are put into a learning portfolio with evidence of correct running, for assessment purposes.

Similar to Scratch – The Python development kit can be downloaded for free from the Python website and lots of tutorials exist, YouTube being a great place along with CodeAcademy.org. These are great places and great links to help your child gain skills as required for completing this unit.

Assessment Procedures & Key dates

How students are assessed:	Self and peer assessment takes place within lessons as well as verbal feedback from teachers. Students are expected to record formative feedback within their individual journal and update this with how they acted upon the feedback given.
When the key assessment points take place:	<p>At the end of each topic students are formally assessed on what they have learnt in that unit. Students are given WWW (What Went Well) and EBI (Even Better If) comments. Some of the comments given are as generic as possible in order to improve in ICT/Computing (and other subjects) no matter what the topic i.e. Spelling and grammar issues addressed. If file organisation and naming work is a problem this is also addressed along with elements such as seek peer advice or ask others to test and comment on work, develop evaluative skills.</p> <p>Students are provided with feedback in their own personal mark book which contains individual mark sheets for each unit taught that year. This information is fed into an overall mark book for that year to allow full analysis of units taught and results, this is used to track pupil progress.</p>
How we use the assessment data:	<ul style="list-style-type: none"> • To enable us to provide a holistic picture at regular intervals throughout the year of overall attainment. • To group students according to ability and identify any underachievement. • It can also help identify any units taught which may need adjusting for the year group as we can see which unit's students perform better in and which ones they do not allowing us to reflect upon our teaching.
Marking & feedback Policy: Key points/Principles:	<ul style="list-style-type: none"> ➤ The key purpose of feedback and marking is to promote learning. ➤ Feedback and marking must provide information on students' progress ➤ The criteria for assessment is shared and understood by all including teachers, LSAs and students. ➤ Feedback should identify 'next steps' for students to enable progress in relation to the relevant assessment or success criteria ➤ Feedback on 'next steps' must lead to some kind of action by the students if it is to lead to learning. ➤ Summative assessment, formative assessment and peer and self-assessment will be used as appropriate. ➤ The frequency and types of marking will be consistent within teams and in line with departmental policy.