Subject: ICT and Computing

Subject Leader
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National Curriculum
National Curriculum context – how does Kingsmead School follow the National Curriculum (in your subject) A high quality Computing and ICT curriculum to help develop creativity, computational thinking to understand and change the world. Students become digitally literate and are a able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world. We follow the National Curriculum by providing opportunities to students to develop analytical, problem solving, design and computational thinking skills.

Curriculum Intent
- Developing the skills needed for employment.   - Gaining practical experience and competence with contemporary technologies including programming where appropriate.   - Increasing the capacity to transfer knowledge and skills between contexts.   - Developing practical skills in creativity and problem solving.   - Developing an understanding of the social and commercial impact of IT.   - Developing an understanding of the legal, social, economic, ethical and environmental issues raised by IT.   - Developing safe, secure and responsible practice when using IT including reducing risk.   - Development of social and emotional resilience and critical thinking skills   - Provide pupils with skills, knowledge and qualifications to make positive next steps post Kingsmead.

Curriculum Implementation

Term	Content/Topics	Assessment

Year 7	Autumn Term	1	Introductory lesson (fun lesson e.g. graffiti creator to label ICT book, PS4 controller skins, Befunky photo editor) Introduction to school network (turning on the computer, logging in,, saving documents, creating new folders, opening programmes etc)- Learning to type games Online e-safety quiz before students get into the bulk of the ICT course. Some introduction to Satchel and using Email functionality. **Unit 1: How computers work part 1** This unit looks at the different parts of a computer and what can be connected to it. Inputs and outputs. Storage devices. Learning to type. Use of Ilearn website for further information and resources Understand how to type effectively Understand the importance of using folders to save work. Understand differences between messy and organised folders. Understand email acceptable use Demonstrate how to compose and format emails. Identify key components of emails Identify input and output devices. Be able to tell differences between input and output devices. Able to name some storage devices. Able to discuss functions of these storage devices. Have understanding about hardware components in a computer. Understand importance of being safe online	• How Computers work assessment to be completed • Evidence of complete worksheets related to inputs, outputs, storage devices and learning to type • Student response to feedback and use of self-assessment where appropriate

| 2 | Introductory lesson (fun lesson e.g. graffiti creator to label ICT book, PS4 controller skins, Befunky photo editor)
Introduction to school network (turning on the computer, logging in,, saving documents, creating new folders, opening programmes etc)- Learning to type games

Online e-safety quiz before students get into the bulk of the ICT course.
Some introduction to Satchel and using Email functionality.

Unit 1: How computers work part 1

This unit looks at the different parts of a computer and what can be connected to it.
Inputs and outputs.
Storage devices.
Learning to type.
Use of Ilearn website for further information and resources
Understand how to type effectively
Understand the importance of using folders to save work.

Understand differences between messy and organised folders.

Understand email acceptable use
Demonstrate how to compose and format emails.

Identify key components of emails
Identify input and output devices.

Be able to tell differences between input and output devices.
Able to name some storage devices.
Able to discuss functions of these storage devices.

Have understanding about hardware components in a computer.
Understand importance of being safe online | • How Computers work assessment to be completed

• Evidence of complete worksheets related to inputs, outputs, storage devices and learning to type

• Student response to feedback and use of self-assessment where appropriate |

		3	**Computer Systems**	Understanding about input and output
				Understanding about storage devices
				Understanding about internal and external components
				How does fetch –execute cycle works
			• To show understanding of the difference between input and output devices with suitable examples.	
			• To understand the difference between internal and external devices with suitable examples.	
			• To describe the different types of storage: Magnetic, Optical and Solid State.	
			• To understand the role and purpose of the CPU and the relationship with RAM (Fetch-Execute Cycle).	
			• To show an understanding of an embedded system including suitable examples.	
	Spring Term	4	**Computer Systems**	Benefits and drawbacks of embedded systems
				Computer systems assessment
			• To show understanding of the difference between input and output devices with suitable examples.	
			• To understand the difference between internal and external devices with suitable examples.	
			• To describe the different types of storage: Magnetic, Optical and Solid State.	
			• To understand the role and purpose of the CPU and the relationship with RAM (Fetch-Execute Cycle).	
			• To show an understanding of an embedded system including suitable examples.	
			. **logic gates**	
			▪ Electrical switches	
			▪ Understanding the working of logic gates	
			▪ To apply the concept of logic gates to analyse and build logic circuits	
			▪ To analyse the logic circuit of half adder	
			▪ Using these logical operators used in programming	

		5	**Travel Brochure** Understand the importance of audience and purpose. Know why we plan things before making them. Gain experience of planning. Understand importance of planning Understand differences between good and bad logo designs. Understand the Importance of acknowledgements. Describe how to comply with copyright legislation Collect images to be used in the source table Understand the importance of audience and purpose Apply our internet proficiency skills Demonstrate basic and advanced skills Implement feedback provided	• Self evaluation • Peer evaluation • Assessment against set criteria
	Summer Term	6	**Data Representation** Explain why a computer uses binary. To be able to identify the number of bits in different units of data e.g. Bit, Nibble, Byte, Kilobyte, Megabyte, Gigabyte, etc. To explain the difference between 'base 2' and 'base 10' numbering systems. To be able to convert binary into denary and vice versa. Explain how characters are stored in the ASCII character set.	Understanding about bits, nibble, byte and kilobyte Able to convert binary to denary Able to convert denary to binary End of topic assessment

	Term		**Content/Topics**	**Assessment**
Year 8	Autumn Term	1	**Scratch Programming** Use sensing commands Understand IF statements Experiment with effects Change the costume of sprites Add animations to sprites Repeat blocks using loops Use the pen tool in Scratch Convert flowcharts into Scratch Blocks Repeat blocks using loops Create variables Explain how data changes in variables Use show and hide blocks Insert backdrops Change backdrops Use sensing commands Create music	

			Practise different instruments Record my voice	

		2	**Computational thinking unit**
			We are learning the four elements of computational thinking:
			    • **Decomposition**
			    • **Pattern Recognition**
			    • **Abstraction**
			    • **Algorithm Design**
				Understanding about decomposition, pattern recognition, abstraction and algorithm design
				End of topic assessment

	Spring Term	3	**Networking**
			    To understand what is meant by a **Local Area Network** (**LAN**).
			        Hardware required
			        Methods of connection (**WiFi** & **Ethernet cable**)
			    To understand what is meant by a **Wide Area Network** (**WAN**).
			        Methods to connect (**GPRS**, **mobile**, **telephone cables** & **satellite**).
			    To understand how **peripheral devices** can connect to a computer system using a **Wireless Personal Area Network** (**WPAN**).
			        Methods to connect (**Bluetooth**).
			    Understand the following methods of keeping you computer secure on a computer network:
			        Firewall, **anti-malware**, **passwords** & **encryption**.
				End of topic assessment

		4	**Computer Systems**
			    • Explain factors affecting **CPU performance**.
			        • Clock Speed
			        • Cache Size
			        • Number of Cores
			    • **RAM, ROM** and **Virtual Memory** – understanding of differences between **volatile** and **non-volatile** memory.
			    • Explain factors affecting **secondary storage**.
			        • Cost
			        • Capacity
			        • Speed
			        • Portability
			    • Understand the **Fetch – Execute Cycle**.
				End of topic assessment

	Summer Term	5	**Introduction to Microsoft Excel** Be able to enter data Be able to format spreadsheet Able to use +, -, * and / to perform various calculations Able to construct graphs and understand benefits of charts and graphs Use formulae and functions such as Sum and Average to perform various calculations	• The assessment for this unit is in the form of a multiple choice test. Alternatively, learners could complete the test digitally using self-marking software (Google Forms, Microsoft Forms, Socrative, Diagnostic Questions, etc

			Able to sort and filter data	

		6	**Algorithm**
			
			Understand that an algorithm is a set of instructions used to solve a problem.
			Use both **flowchart** and **pseudocode** to design an algorithm.
			To recap the following algorithm design techniques **Sequence** and **Selection**.
			To understand the following data types:
			      Character
			      String
			      Real
			      Integer
			      Boolean
			To learn how to use **looping** to write repeatable sequences of code.
			To apply understanding into **subroutine** challenges.
			To understand different types of **errors** that can occur while writing
				End of topic assessment

	Term		**Content/Topics**	**Assessment**
Year 9	Autumn Term	1	**Esafety (Entry level 1 ICT)** To explain how internet is dangerous and how to protect ourselves from it To identify devices that can cause risk and how to protect from them Explain what cyberbullying is and how to protect from cyberbullying Benefits and limitation of social networking Understand how to apply basic and advanced formatting to Microsoft word documents Understand and apply basic formatting to Microsoft Powerpoint Understand and apply basic and advanced formatting to Publisher documents e.g inserting text, inserting pictures, changing fonts, colours, editing Understand how to keep safe when using technology. Identify risks. Explain possible solutions and preventions for each risk. understood and considered the purpose and audience (Year 6 Pupils) for Esafety leaflet	• Completed Presentation based on the topic given • Entry level 1 completed in ICT, this encompasses students creating a presentation or leaflet related to Esafety. • Question and answer session • Students responding back to feedback • Self assessment by students • Peer assessment by students where appropriate • Students complete assessment related to computer misuse act and copyright act • Students design leaflets and powerpoints related to copyright act and computer misuse act

		2	**Recap on Esafety** To explain how internet is dangerous and how to protect ourselves from it To identify devices that can cause risk and how to protect from them Explain what cyberbullying is and how to protect from cyberbullying Benefits and limitation of social networking Understand how to apply basic and advanced formatting to Microsoft word documents Understand and apply basic formatting to Microsoft Powerpoint Understand and apply basic and advanced formatting to Publisher documents e.g inserting text, inserting pictures, changing fonts, colours, editing images, changing background, cropping pictures and printing completed documents	• Presentation or leaflet completed against the entry level criteria • Question and answer session • Students responding back to feedback • Self assessment by students • Peer assessment by students
		3	**Introduction to Python Programming** Learn about data types Learn how to display statements using the Python GUI Learn how to store different variables Design and create programmes Debug programmes that accomplish specific goals Use repetition and loops in programmes	• Be able to write basis programmes • Be able to copy and modify programmes • Demonstrate understanding of basic programming and use of variables
	Spring Term	4	**Introduction to Movie Plus** Review Current videos Planning, producing and creating their own movies Understand the sequence of movies, planning movies using storyboard or other planning tools Basic and advanced understanding of the Serif movie make software Gathering of elements Students are provided movie criteria and also log to assess current progress Students understand how to add text, images, sound and video to the Movie plus software Students learn skills related to trimming, splitting and exporting movies in a different format. Students learn to test and evaluate completed movie to determine areas of strengths and developments. Students working towards level 2 will action these areas of development	
	Summer Term	5	**Introduction to Movie Plus** Review Current videos Planning, producing and creating their own movies Understand the sequence of movies, planning movies using storyboard or other planning tools Basic and advanced understanding of the Serif movie make software Gathering of elements Students are provided movie criteria and also log to assess current progress	Completion of the Entry level course

		6	**Computer Crime Unit** Identify common types of computer crimes Look at examples of computer crimes on the internet Learn about different types of email scams and phishing Recognize the signs of fraudulent emails Learn about the Computer misuse act Look at the examples of computer misuse act Understand what is meant by hacking and types of hacking How to protect from phishing, emails scams and hacking Understand what is malware and how to protect from malware Recap on types of malware e.g spyware, Trojan horse, worms etc End of topic assessment and end of year assessment	• Assessment linked to understanding developed while completing the coursework. Evidence of completed Presentation or word document.

Students understand how to add text, images, sound and video to the Movie plus software
Students learn skills related to trimming, splitting and exporting movies in a different format.
Students learn to test and evaluate completed movie to determine areas of strengths and developments. Students working towards level 2 will action these areas of development

	Term		**Content/Topics**	**Assessment (including formal exam options)**
Year 10	Autumn Term	1	Digital Modelling Level 1/Level 2 Recap on basics related to Microsoft Excel How to enter data, sort data and use formulae Set up a structure for a model to meet its needs Enter numerical value in the model Able to format spreadsheet model Able to use functions such as SUM, Average, min and max Able to create appropriate graphs and charts Include Conditional formatting and IF statements in the model Able to evaluate final model Able to use advanced functions such as Countif and vlookup where appropriate	• Assessment based on the completed model • Internal moderation • External moderation • Students provided feedback to improve model • Evaluation of the model

		2	Digital Modelling Level 1/Level 2 Recap on basics related to Microsoft Excel How to enter data, sort data and use formulae Set up a structure for a model to meet its needs Enter numerical value in the model Able to format spreadsheet model Able to use functions such as SUM, Average, min and max Able to create appropriate graphs and charts Include Conditional formatting and IF statements in the model Able to evaluate final model Able to use advanced functions such as Countif and vlookup where appropriate	Internal Moderation and External Moderation completed • Students complete formal assessment related to differences between graphics types and file types
	Spring Term	3	Digital Editing (Powerpoint Unit) or Word pathway I can identify the types of information needed in my work I can identify a suitable structure for presentation I can follow instructions to use the layout in accordance with guidelines I can select and use appropriate media for the publication I can evaluate a design in terms of its suitability for purpose I can consider issues related to open systems I can identify copyright on information used for import I can identify file types suitable for import I can convert file types to compatible formats	• Completed Presentation or word documents • Self assessment • Peer assessment • Internal moderation • External Moderation • Assessment against the set criteria • Students respond back to feedback
		4	Digital Editing (Powerpoint Unit) or Word pathway I can identify the types of information needed in my work I can identify a suitable structure for presentation I can follow instructions to use the layout in accordance with guidelines I can select and use appropriate media for the publication I can evaluate a design in terms of its suitability for purpose	

			I can consider issues related to open systems I can identify copyright on information used for import I can identify file types suitable for import I can convert file types to compatible formats	
	Summer Term	5	**Digital Graphics** Identify differences between bitmap and vector images Develop understanding of lossy and lossless compression Edit and manipulate images using Serif Photo Plus Merge images together Evaluate final graphic created I can identify design needs e.g a simple plan to identify needs of audience I can find suitable images to support my design Source of images to identify where images were procured from, do they comply with copyright legislation Understand how to use Serif Photo plus – basic introduction on skills e.g inserting images, adjusting and retouching images, use of Makeover studio if applicable, Using Creative imagery tools to enhance images. Students will learnt how to rotate, align and layers images- this will be demonstrated in the work they have completed Students will learn how to scale images, this will be demonstrated in the work they have completed Students will learn difference between vector bitmap images Understand how to export vector graphics into rastor graphics Complete evaluation of finish work.	• Understanding of differences between bitmap and vector images • End of topic assessment • Final edited images • Self assessment and peer assessment to improve work • Teachers feedback

	Term		Content/Topics	Assessment (including formal exam options)
		6	Exam preparation to carry on if not completed in Summer 1 Closing any gaps- ensure all students have completed, level 1 IT security unit, digital modelling and digital editing unit. Students who have gaps need to be given sufficient time to close these gaps. Students who have completed these units to be pushed towards Level 2 qualification, teachers to provide feedback related to improvements they should make to improve work.	
	Term		**Content/Topics**	**Assessment (including formal exam options)**
Year 11	Autumn Term	1	**Level 2 Digital Editing Unit** Explain the type of information and structure for the presentation Explain Copyright act and implications if not complied with the Copyright act Explain about the importance of file types and why we use them Demonstrate skills to create advanced multimedia presentation with video, sound and appropriate text/pictures Be able to summarize information using Charts and tables. Demonstrate understanding about storage devices and why we use them Explain about display devices and why we use them Be able to test and evaluate completed multimedia presentation	• Multimedia presentation with appropriate text and layout • Self assessment and peer assessment • Feedback from teacher
		2	Improving Productivity Level 2 I can identify the purpose of using IT in my task I can plan appropriately to carry out IT related tasks I can identify reasons for choosing particular software I can demonstrate the need of using AUP I can identify automated routines to improve productivity e.g CTRL C For Level 2 where appropriate – Students need to describe the methods, skills and resources needed to complete my tasks successfully	

		describe factors that might affect the task describe any legal or local guidelines or constraints that apply to the task or activity		
	Spring Term	3	**Exam preparation** Close any gaps Ensure students have completed necessary units to achieve minimum level 1 qualification in ICT Exam preparation 1) Introduction to cloud computing- benefits and limitations 2) Introduction to programming using HTML- why do we use HTML tags , difference between HTTP and HTTPS 3) Understand about blogs, web blogs, wikis, chatrooms- investigate benefits and limitations 4) What is Voice over internet protocol? Benefits and limitations of this 5) Understand about different types of software and file extensions- need of file extensions 6) Understand about data representation and the need of it? 7) How disable people use ICT? E.g puff up switches, eye typer and foot mouse devices 8) Recap on Copyright laws and computer misuse act legislation 9) What is AUP and need of AUP?	
		4		
	Summer Term	5		
		6		