Computing Scheme of Work Year 8 2018/2019

Computational Thinking

Programming

Data Representation

Safety and Responsibility

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Year 8 Computing Scheme of Work 2018/2019

Introduction:

The following scheme is created to enable class teachers to plan, prepare and assess pupil work according to an overall learning journey. The needs of the learner are paramount and differentiation of this scheme is expected. No doubt there will be further opportunities for students to be taught topics that will further enrich the current scheme. Therefore, it is expected that staff should collaborate and share best practise wherever possible so as to provide more learning opportunities for pupils to make progress in Computing at Alt Bridge. Staff are expected to use a range of assessment strategies and incorporate Assessment for Learning within their teaching style. Further guidance on marking and feedback can be found in the department marking and feedback policy. In addition, where appropriate staff should make pupils aware of links to literacy and numeracy. CLC sessions are available to book for in-class digital workshops. There is also a bank of 10 I Pads available in the main Computing Room.

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The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

In Key stage 3

Pupils should be taught to:

- 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.

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Computing programmes of study: Key stages 3 and 4, National curriculum in England, DFE-00191-2013
[https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239067/SECONDARY_national_curriculum_-_Computing.pdf]

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Overview of the Year:

Module	Topic
1	E-safety, Security and Digital Footprints
2	Understanding Computers
3	How data is represented in computers
4	Programming
5	Digital Creativity
6	Collaborative Project

✓ Indicates that an appropriate homework could be set from this lesson.

Where suitable, CLC sessions are available to book for in-class digital workshops.

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Module	Theme	Calendar Events	Week	Topic	Learning Outcomes	Homework
1	Computing in the wider context		1	Issue books – labels and expectations Logging on Setting up emails on mobile devices Privacy and Digital footprint. https://www.commonsensemedia.org/educators/lesson/trillion-dollar-footprint-6-8	Students will be able to ... • learn that they have a digital footprint and that information from it can be searched; copied and passed on; seen by a large, invisible audience, and can be persistent. • recognize that people's online information can be helpful or harmful to their reputation and image. • consider their own digital footprints and what they want those footprints to be like in the future.	**1**
			2	Private today Public tomorrow https://www.commonsensemedia.org/educators/lesson/private-today-public-tomorrow-9-12	Students will be able to ... • consider the possible benefits and risks of sharing information online. • recognize the importance of context in posting or viewing online images. • understand what choices they need to make to protect the privacy of others online	
			3	Explore the risk and consequences of sharing personal information https://www.commonsensemedia.org/educators/lesson/privacy-rules-3-5	Students will be able to ... • learn which information they should avoid sharing online because it is private. • understand which kinds of websites have privacy policies, and why. • practice checking websites they visit for privacy policies and privacy seals of approvals.	
			4	Copyright and piracy https://www.commonsensemedia.org/educators/lesson/copyrights-and-wrongs	Students will be able to ... • identify the legal and ethical considerations involved in using the creative work of others. • understand an individual's rights and responsibilities as a creator and consumer of content. • practice critical thinking and ethical decision making about the use of creative works.	
			5	Rework, Reuse, Remix https://www.commonsensemedia.org/educators/lesson/rework-reuse-remix-6-8	Students will be able to ... • identify the key points required for a creative work to fall under fair use. • judge whether or not the two case studies can be called fair use. • understand the value of fair use by reworking and remixing copyrighted material in a collage or video.	

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Module	Theme	Calendar Events	Week	Topic	Learning Outcomes	Homework
			6	Assessment – formal topic test		
			7	Fix-it-Five	To respond to feedback on assessment	
			8	The Reality of Digital Drama https://www.commonsensemedia.org/educators/lesson/the-reality-of-digital-drama-6-8	Students will be able to: • reflect on their own impressions of digital drama. • compare underlying messages about drama on reality TV with "real world" digital drama among young teens. • think critically about the gender stereotypes associated with drama.	
	Half Term					
2	Understanding Computers		1	Input, Process & Output	Describe a computer System - Input Process Output	
			2	The CPU	Explain the function of the CPU – in the context of the fetch execution cycle.	✓
			3	Components of a Computers System	Identify and describe the main internal and external components of a computer system	
			4	Input and Output Devices	Classify components as input, process, output or storage device. Compare different input and output devices	✓
		Assessment week	5	Assessment – formal topic test		
		Data Input	6	Fix-it-Five	To respond to feedback on assessment	✓
			7	Seasonal lesson		
	Christmas Break					
3	How data is represented in computers Code Breakers unit of work is also available for download from Knowsley CLC.		1	Data in Computer Systems	To define the terms bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte To understand that data needs to be converted into a binary format to be processed by a computer.	✓
			2	Data in Computer Systems	To be able to explain why data is represented in computer systems in binary form	
		Safer Internet Day	3	Data in Computer Systems	Represent text as binary such as writing names in binary or decoding secret messages	✓
		Assessment week	4	Assessment – formal topic test	Yacapaca login details needed. Assess knowledge and generates a grade linked to NC. Pupils familiar with this format.	
		Data input	5	Fix-it-Five/Next-Steps	To respond to feedback on assessment	✓
			6	Data in Computer Systems	Basic ASCII – work out denary value of your name Decode secret message from binary – Decode Binary worksheet and message. Write your name in Binary	
	Half Term					

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4	Programming http://www.teach-ict.com/2016/ks3/sows/sow1/sow_menu.html Possible alternative programming is the use of Micro Bits from BBC. Bank of 30 available in Mr Jones' room.		1	Introduction to Python	• All students will: Be able to write and run a simple computer program • Most students will: Be able recognise simple errors in their program and know how to fix them • Some students will: Be able to clearly explain the purpose of variables and values	
			2	Input function and user response	• All students will: write a program which asks a user to input a response to a question • Most students will: be able to format their output so that it displays text and separate words correctly • Some students will: be able to write a multiline program which asks a series of questions and reliably takes the user input to create a tailored response	✓
			3	If... Else conditions	• All students will: be able to provide suitable responses for If … Else conditions • Most students will: be able to correctly order the code for If .. Else conditions and explain what the code is doing. • Some students will: be understand the logic behind an Elif condition and be able to write code that includes an Elif.	
			4	Planning programming code for a chatbot	• All students will: write a plan for their chatbot logic prior to beginning programming • Most students will: have written and tested the code for at least 2 elements of their chatbot program. • Some students will: have written and tested the code for at least 4 elements of their chatbot program.	✓
		Assessment week	5/6	Assessment – Chatbot program	• Know: how to provide sensible and constructive feedback when assessing a peer's work • Understand: the type of feedback that would be considered appropriate or inappropriate in relation to another student's work • Be able to: take on board feedback from other students and identify where they could make improvements in their own work	
	Easter Break					
5	Digital		1	Fix-it-Five/Next-Steps	To respond to feedback on assessment	✓

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Module	Theme	Calendar Events	Week	Topic	Learning Outcomes	Homework
	Creativity (Faking It unit from www.teach-ict.com) CLC can deliver or potentially loan kit to school for this unit of work.		2	Airbrushing	• All pupils will: be able to identify an airbrushed image against a non-airbrushed image • Most pupils will: be able to give a couple of reasons why airbrushing can cause problems • Some pupils will: be able to give a balanced argument for the pros and cons of airbrushing along with supporting examples.	
			3	Photo Editing Techniques	• All pupils will: Have practised at least three techniques during the lesson • Most pupils will: Have practised the majority of the techniques during the lesson • Some pupils will: Have practised all of the techniques during the lesson and begun to find out different techniques through research on the internet.	✓
			4	Image Manipulation	• To find at a photograph and be able to identify improvements which could be made. • To use graphics editing software and make the improvements which have been identified by the student. • To practise image manipulation techniques introduced during the previous couple of lessons	
			5	Image Manipulation	• All pupils will: use techniques they have learned to improve at least one image • Most pupils will: use techniques they have learned to improve at least two images • Some pupils will: have found out about the dodge and burn tools for themselves and used these techniques to improve an image	✓
			6	Applying image manipulation and photo editing techniques		
	Half Term					
6	Collaborative Project Possible projects:		1	Plan a project as part of a group	• Give detailed information about the final product to be produced. • To contribute effectively to the work of a group most of the time, to produce detailed planning documents e.g. mind map, brainstorm, thought-shower, showing the allocation of tasks. • To list a range of appropriate success criteria will be given.	✓

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Module	Theme	Calendar Events	Week	Topic	Learning Outcomes	Homework
	Green Screen, Child Net online safety video competition, App development, Robot Wars Challenge using Spheros CLC sessions.		2	Investigate how search engines work	• describe the main features of three different types of search engine, giving at least one example of each. • explain the appropriate use of at least three techniques when using search engines. • compare the results of searches using these techniques in three different types of search engine	✓
			3	Carry out research for the group project	• identify a range of information required. • carry out research using the internet and at least two non-internet sources. • use effective internet search criteria. • list sources and evaluate the suitability and reliability of most of them. • comment on the copyright of most of the information found.	
			4	Create the allocated part of the group task containing information from a range of sources	• create a document as per their allocated task set by the group. • use information from at least four different sources, including at least one non-internet source. • download graphics and text • acknowledge their sources through appropriate captions or cross-references and in a bibliography.	✓
		Assessment week	5	Assessment		
		Data input	6	Fix-it-Five/Next-Steps	To respond to teacher feedback	
		Activities Week	7			