

YEAR 9, Representations (Term 2), Computer Science (Creative Industries)

Rationale and Context of Unit:	Core curriculum content:	Tier 2 & Tier 3 vocabulary explicitly taught:
<p>Thus far, students have covered basic computer skills, coding skills and have looked at how computers operate as well as hardware and networks. Year 9 builds on knowledge which students have learned in year 7 and year 8 and starts prepare them for Computer Science GCSE course.</p> <p>In Key Stage 3 students must:</p> <ul style="list-style-type: none"> 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 understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally in the form of binary digits. Student must also understand how to convert these digits. <p>We cover the above points in this unit.</p>	<p>Students are taught: This unit conveys essential knowledge relating to binary representations. The activities gradually introduce learners to binary digits and how they can be used to represent text and numbers. The concepts are linked to practical applications and problems that the learners are familiar with.</p> <p>This knowledge will need to be applied if a student takes the KS4 Computer Science course.</p> <p>If a student is interested in a career in coding or programming, this unit will further their understanding and knowledge of how text, sounds and pictures etc. can be represented as binary digits.</p>	<p>Binary numbers (2) Decimal numbers (2)</p> <p><i>NB. Each lesson has a key words list to accompany the students' learning and more words may be explicitly taught than the above but these are obligatory.</i></p>

Challenge and Support:	World wide learning/ links to 21st century:	Cultural capital/ Industry/ Enrichment:
<p>Each lesson has EDSM descriptors and there are tasks in each lesson which target HAPs.</p> <p>This scheme gives students the opportunity to extend their knowledge of how a computer really works. There are extension tasks for HPAs throughout the unit.</p> <p>Students will be taught how to change the colours of documents. A list of key words/ word bank is available for every lesson with definitions.</p> <p>Tasks are chunked with step by step instructions and the lessons powerpoints are saved on our google classrooms. Students who need to, can save a copy to their areas so they can refer back to it. They can print the document if needed and make notes (or do this electronically).</p> <p>Extra help guides are also available in both electronic and printed out formats for various pieces of software.</p> <p>Writing frames / bullet points to support learners with extended writing tasks.</p> <p>Students are given plenty of time (at least a week) to complete any homework tasks. They are encouraged to complete this at lunchtime or at homework club, giving them access to computers, if they do not have IT access at home.</p>	<p>Each lesson has either a ‘real life link’ or a ‘link to careers’ section, depending on which one is relevant to the lesson.</p> <p>IT is a huge industry now and many students talk about wanting to be games designers / wanting to work in this area but very few of them understand the fundamental basics of how computers work. This unit aims to build on knowledge from past units so students are fully informed about what a career in ‘games design’ (for example) would actually entail.</p> <p>Alan Turing project extension lesson provides links to real life history, along with an extension task.</p>	<p>Students have an opportunity to look at more types of coding which targets any budding computer programmers / coders.</p> <p>Careers link on each lesson provides a prompt for students to go and research that particular career.</p>

<p>Lessons will be further differentiated in accordance with SEND and PP passports. Seating plans will be annotated based on passports.</p> <p>To support SEND students further, scaffolding, cognitive and metacognitive strategies, explicit Instruction, memory retrieval techniques and flexible grouping are used, along with the aid of technology.</p>		
<p>Historical, Social, Moral, Spiritual, Cultural context:</p>	<p>Cross curricular links/ literacy/numeracy:</p>	<p>Common misconceptions:</p>
<p>We at look at previous systems of writing and recording methods and other systems which use symbols to communicate their messages.</p> <p>We look at how technology and computers have developed through time.</p> <p>When discussing the history of computers / technology, Alan Turning is discussed and in turn gay rights and society's attitude to this then and now.</p>	<p>This unit links to history (Alan Turing), Maths and Science (binary).</p> <p>Opportunities to read out aloud in class (or to each other) from information on lesson powerpoints.</p> <p>This unit also links to English and language in general. Why do we use a letter to represent a particular sound? Why do we write? Why is this useful?</p>	<p><i>"I have to be good at maths to be good at Computer Science"</i> - You do not have to be an expert in maths to be successful in the area of CS but a good knowledge at school is helpful.</p> <p>This unit aims to explain binary and other representations in a simple way which all students can access.</p> <p>That a computer works based on its operating system. Students do not think beyond the user interface and how a computer really communicates.</p>
<p>Assessment timeline:</p>		
<ul style="list-style-type: none"> • Skills will be assessed on a lesson by lesson basis using AB tutor to monitor students' progress with the development of their computer science skills. • Recap / memory exercises at start and end of each lesson. • All lessons show examples of what students are aiming for (where applicable) • EDSM criteria included in all lessons so students can self-assess each lesson • Assessment quiz at the end of the unit. 		

Home learning

HMK tasks doc on converting binary numbers (Lesson 4)
 HMK task on reading comprehension (lesson 5)
 HMK: revision (lesson 5/6)

Further reading / watching:

- Further reading comprehension on binary coding (Lesson 4)
- Further reading comprehension on how binary digits are stored and processed in digital devices (Lesson 5)
- <https://www.bbc.co.uk/bitesize/guides/z26rcdm/revision/1>
- <https://www.bbc.co.uk/bitesize/guides/zfspfcw/revision/1>

Feedback

Self-marking assessment quiz on google forms
 Whole class feedback on HMK
 Class discussions used regularly. Online Quizzes

Length of unit (duration indicated in lessons)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Unit: Representations (Term 2 of Year 9)																													