Computer Science

Year 7 Curriculum Map

Year 7 – Autumn Term

Prior Learning	The experience of Computer Science at key stage 1 and key stage 2 for our new year 7 pupils will again be diverse. This term, units of work will focus on bridging the gap in computer science knowledge. This is fundamental in providing the learners with the tools they need to succeed throughout key stage 3 and key stage 4 with a view to being able to take these skills into the working environment and world beyond school. Year 7 pupils will enhance their skills in Synergy, Office 365, One Drive, File and Folder Management, using word processing, presentation, to allow pupils to enhance fundamental skills, often omitted from Primary Education. The topic areas studied at the beginning of year 7 aim to introduce and enhance the basics of using IT equipment and being able to organise their user areas in terms of file and folder management.
What will I learn?	**Schools System Training** - Pupils will be trained on how to use school systems, so that pupils will know how to effectively navigate Synergy, Office 365 (email), One Drive and platforms such as Educake and how to access this for home learning. Word processing and presentation skills will also be developed in this unit, including basic functional skills such as saving, sending, file management and email etiquette. • Passwords • Synergy • Email Office 365 • One Drive • Educake • Word processing and presentation skills **Kodu Game Lab – Sequences and Instructions** - This unit aims to teach pupils the fundamentals of games programming using Kodu Game Lab, which is a visual game development environment. Using Kodu Game Lab pupils will develop a range of key skills which include drawing and sculpting a world, adding character and objects. The use of 'When' and 'Do' instructions to control characters and objects including the use of paths and pages. Once pupils have built their skills they are required to design, create, test and evaluate their own game.
How will I be assessed?	**Practical and Formal Assessments** - Each unit of work is assessed in two ways. The first being the practical and project-based learning and the second form of assessment will be a summative, online assessment. **Formative Assessment** - will take place as part of recall and retrieval practice, low stakes testing, self and peer assessment to identify gaps in knowledge, monitoring and tracking progress throughout.
Next Steps	**Spring Term** – there will be an increase in the level of challenge, building on prior learning in the Autumn term. Pupils will complete project based in Scratch programming and will be introduced to text-based programming using Python programming language. **Year 8 and Year 9** The prior learning in year 7, particularly in the Autumn term, provides pupils with the fundamentals to access key topics in year 8 and year 9. These are linked to intermediate and advanced test-based programming using Python and HTML Web Design. It must also be acknowledged that these are key skills that will enable pupils to access Computational Thinking, Algorithms and Programming at GCSE level.
Opportunities for	The Computer Science department are continually updating links to extra learning activities to benefit our pupils. Below, there are links to multiple websites and video sharing sites that pupils can use for independent learning. http://www.kodugamelab.com/ - Kodu Game Lab (Free Download)

Independent Learning	https://www.youtube.com/watch?v=eZ5EVicSOU0 - Build a Kodu Game https://hourofcode.com/mchoc - Minecraft https://hourofcode.com/hatchmario - Mario https://hourofcode.com/flap - Flappy bird https://studio.code.org/hoc/1 - Angry birds https://blockly.games/- Block based games – Mazes Office 365 – Available for free for home use on up to 5 devices. https://www.bbc.co.uk/bitesize/subjects/zvc9q6f - BBC Bitesize
Personal Development and CEIAG	Pupils will experience links to the PSCHE curriculum through transition and safety where they will be made aware of new procedures and protocols surrounding safe and effective use of equipment. Pupils will also examine developing skills and aspirations that lead to career and further education opportunities for Computer Science. Pupils will also experience the 'Rule of Law' in Computer Science by gaining a having a sense of responsibility, adhering to the school code of conduct for using computing equipment. **Careers and Aspirations** Pupils will study and develop the skills needed for future careers. Pupils will need to be 'work-ready' particularly for the future jobs and careers that don't yet exist! **Computing Starters:** To highlight possible career opportunities that are available in Computing/ICT. **Career Focus**: Become a Robotics programmer - links to all aspects of year 7 Computer Science curriculum through programming and computational thinking. **Career Focus**: Become a Games Developer - links to Kodu Game Lab and Scratch programming. **Further Education Focus**: BTEC Level 3 E-Sports, Burnley College.
Enrichment Opportunities (Cultural Capital)	Throughout year 7, pupils will have access to computing devices, technology and out of school-based learning. **Computer Science Club** – Lunchtime activities to build coding skills. **Minecraft Education** – Cloud Computing and working collaboratively online. **Lego Mindstorm** – Plan, assemble and program using robotics software. The following movies and TV Shows will further enhance the knowledge and understanding of key topic areas: • 'Wreck it Ralph' • Steve Jobs • A.I. Artificial Intelligence • War Games

	Year 7 – Spring Term
Prior Learning	It is essential that pupils are familiar with key terms, learnt through the autumn term for them to access the challenging nature of block editing and text-based programming. Autumn term lays the foundation for this learning to take place bridging the gaps in skills, knowledge and understanding. The consensus among secondary education providers is that we must assume that learners have not followed a clear and structured curriculum in Primary education.
What will I learn?	**Scratch Programming** - Pupils begin by understanding how instructions need to be written in sequences. Pupils then work on creating various products in Scratch – starting with an animation then moving onto games, acquiring skills, knowledge and understanding of abstraction and decomposition to solve a given problem.

	Modelling - Spreadsheets - Pupils will learn the fundamentals how to use computer models to make simple predictions. They will develop skills in formatting and laying out data, understand the need for accuracy when entering data, and learn to use a range of basic spreadsheet formulae and functions to make predictions. Pupils will also learn to filter and sort data, use conditional formatting and present data in graphical forms using a range of graphs and charts.
How will I be assessed?	**Practical and Summative Assessments** - Each unit of work is assessed in two ways. The first being the practical and project-based learning and the second form of assessment will be a summative, online assessment. **Formative Assessment** - will take place as part of recall and retrieval practice, identifying gaps, monitoring, and tracking progress throughout.
Next Steps	**Summer Term** **BBC Micro: bit** - This unit of work is essential to fully consolidate the gaps in knowledge from the key stage 1 and key stage 2 curriculum and allows for teaching and learning to be taken outside of the classroom. The rationale behind delivering the BBC Micro: bit at this stage is to allow pupils to fully engage with their learning as part of the course intends to take learning out of the classroom for various activities such as orienteering, step counting and collecting temperature data, all of which must be pre-programmed by pupils prior to the tasks being carried out. **Minecraft Education** - Working collaboratively with Minecraft Education, this can also be differentiated to suit all learners of all abilities whilst enthusing and engaging pupils in Computer Science topics, enhancing communication and creativity skills. **Year 8 and Year 9** By developing skills in using basic spreadsheet functions this gives pupils access to presenting data in meaningful and accessible way across the curriculum. Understanding modelling functions is a key aspect of the use of computer technology in that "what-if" questions can be asked. The quality of the model determines the validity of the result. This underpins the study of computer science at GCSE.
Opportunities for Independent Learning	The Computer Science department are continually updating links to extra learning activities to benefit our pupils. Below, there are links to multiple websites and video sharing sites that pupils can use for independent learning. https://scratch.mit.edu/download - Scratch offline (Free Download) https://scratch.mit.edu/ - Scratch online (Free to use) https://www.bbc.co.uk/bitesize/guides/zdydmp3/revision/1 - BBC Bitesize
Personal Development and CEIAG	Pupils will experience links to the PSCHE curriculum through transition and Safety where they will be made aware of new procedures and protocols surrounding safe and effective use of equipment. Pupils will also examine developing skills and aspirations that lead to career and further education opportunities for Computer Science. Pupils will also experience the 'Rule of Law' in Computer Science by gaining a having a sense of responsibility, adhering to the school code of conduct for using computing equipment. **Careers and Aspirations** **Computing Starters:** To highlight career opportunities that are available in Computing/ICT. **Career Focus**: Become a Robotics programmer - links to all aspects of Year 7 Computer Science curriculum through programming and computational thinking. **Career Focus**: Become a Games Developer – links to Kodu Game Lab and Scratch programming. **Further Education Focus**: BTEC Level 3 E-Sports, Burnley College. A-Level Labnet Computing, Burnley College.
Enrichment Opportunities (Cultural Capital)	Throughout year 7, pupils will have access to computing devices, technology and out of school-based learning. The Computer Science department intends to focus on the most disadvantaged allowing access to technology that they would not normally have access to. **Computer Science Club** – Lunchtime activities to build coding skills. **Minecraft Education** – Cloud Computing and working collaboratively online.

	Lego Mindstorm – Plan, assemble and program using robotics software. The following movies and TV Shows will further enhance the knowledge and understanding of key topic areas: • 'Wreck it Ralph' • Steve Jobs • A.I. Artificial Intelligence • War Games

	Year 7 – Summer Term
Prior Learning	Systems Training, Kodu Game, and Scratch programming allows pupils to access the final topics in year 7, having built the fundamental skills, knowledge and understanding to complete the tasks. The national curriculum at key stage 1 and key stage 2 requires pupils to have a breadth of knowledge including key terms such as algorithm and computational thinking. The experience that we have at our school is that this learning has not taken place. The year 7 curriculum is designed to bring all pupils up to the same standard of education for them to access the next steps of their learning experience.
What will I learn?	**BBC Micro: bit** – This unit will allow pupils to fully engage and take their learning out of the classroom for various activities such as orienteering, step counting and collecting temperature data, all of which must be pre-programmed by pupils prior to the tasks being carried out. **Minecraft Education** – In this unit pupils will be working collaboratively with Minecraft Education. Pupils will study the features, advantages and disadvantages of using cloud computing to complete specific tasks.
How will I be assessed?	**Practical and Formal Assessments** - Each unit of work is assessed in two ways. The first being the practical and project-based learning and the second form of assessment will be a summative, online assessment. **Formative Assessment -** will take place as part of recall and retrieval practice, identifying gaps, monitoring and tracking progress throughout.
Next Steps	**Year 8 and Year 9 -** Pupils will be taught the impact of social media and how to stay safe online in studying a Cyber Security project. As pupils approach the legal age limit for accessing social media, it is important develop pupils' skills, knowledge and understanding of how social media operates and the hidden dangers faced by inexperienced users. At GCSE level, this learning provides the basis for studying Network Security, Systems Architecture, Memory, Storage and Systems Software. Pupils will also use recall and retrieval practice to focus back on key topic areas in year 7 such as Algorithms, Computational Thinking, Sequence, Selection and Cloud Computing.
Opportunities for Independent Learning	The Computer Science department are continually updating links to extra learning activities to benefit our pupils. Below, there are links to multiple websites and video sharing sites that pupils can use for independent learning. https://microbit.org/ - BBC Micro: Bit https://makecode.microbit.org/ -BBC Micro: Bit https://hourofcode.com/mchoc - Minecraft https://www.bbc.co.uk/bitesize/subjects/zvc9q6f - BBC Bitesize https://www.youtube.com/watch?v=hapW36HQqKY - History of Computers https://www.youtube.com/watch?v=ntBkg2x3EJ0 - Lego Mindstorm Robot Inventor

Personal Development and CEIAG	Pupils will experience links to the PSCHE curriculum through transition and Safety where they will be made aware of new procedures and protocols surrounding safe and effective use of equipment. Pupils will also examine developing skills and aspirations that lead to career and further education opportunities for Computer Science. Pupils will also experience the 'Rule of Law' in Computer Science by gaining a having a sense of responsibility, adhering to the school code of conduct for using computing equipment. **Careers and Aspirations** **Computing Starters:** To highlight possible career opportunities that are available in Computing/ICT. **Career Focus**: Become a Robotics programmer - links to all aspects of year 7 Computer Science curriculum through programming and computational thinking. **Career Focus**: Become a Games Developer - inks to Kodu Game Lab and Scratch programming. **Further Education Focus**: BTEC Level 3 E-Sports, Burnley College.
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