

# Computing and IT Curriculum Statement 2020/21

## Core Values

**Our curriculum is underpinned by our core values of being:**

**Bold...** committed to academic excellence and gaining a range of practical skills in ICT

**Ambitious...** for all pupils to develop their ideas confidently and resourcefully

**Collaborative...** learning involves working together

**Kind....** Respecting each other and allowing others to achieve their full potential and sharing success

## Curriculum Intent

We believe in offering a Computing and IT curriculum at King Edward VI Balaam Wood Academy that considers the National Curriculum and the need to prepare students for the GCSE IT and Computer Science specification. In an ever changing, technologically advancing society it is imperative that we equip our students with the desired skills needed for their future life and career. With new technological jobs emerging constantly that have not previously existed, it is vital that our students are digitally literate, logical and adaptable thinkers who have the knowledge and skills to meet the ever changing and new demands of the future society. The Royal Society has identified three distinct strands within computing that all complement each other – they are Computer Science, Information Technology and Digital Literacy. Each component is vital when preparing our students for their futures within the digital world.

To that end, Key stage 3 Computing and IT Curriculum aims for the following to be achieved by the end of KS3, with 16 lessons in year 7, 8 and 9

- All students should have the skills, confidence and resilience to solve problems and making things better using their knowledge and skills in Computing and IT.
- All students will be given the opportunity to, where possible, select appropriate software to meet the given task.
- All students will understand that there is also an important human side to computer science, as computers fix problems to help people. And, because computers can affect almost every aspect of our lives, there are career opportunities in all areas of industry: from cyber security as a software developer, health as an informatician, to more creative fields - like game development, graphic design, or digital journalism, sport performance or fashion design.
- All students should be able to explore how software and hardware can be used to fix problems in science, business and society as they learn about design and development.
- All students should be able to understand, create and use algorithms and programming. They will be able to use text based and block-based computer programming languages to create interactive games and quizzes using algorithms for the planning stage.
- Students will be given an opportunity as part of an after school club to use a handheld computer called Raspberry Pi in order to program an LED and make it flash by using the programming language Python. Students will be given the opportunity to use microbit using makecode
- All students should understand the significance of cyber security and online safety whilst they are utilising online technologies. They will also understand how to deal with a range of inappropriate behaviours online, for example cyber bullying and how to stay safe when using chatrooms. They will also understand what a network is and the different types of networks. The work on online safety is done in collaboration with what is being taught in LIFE lessons
- All students should understand how to handle data using a range of software's and the significance of using computerised methods in handling data. They will also understand the significance of

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complying with the different laws while dealing with personal data and information. Pupils will be able to transfer these skills into other subjects.

- All students should be able to use a range of IT skills by being creative in presenting their work and will be able to evaluate their own and others work. Pupils will be able to transfer the skills that they have learnt in terms of creating and presenting documents, into other subjects

### **Secure development and achievement in Computing and IT**

- provide opportunities for pupils' personal development in making decisions about using different hardware and software, choosing a computer system for themselves and be competent in using programming languages.
- allows pupils to be bold and achieve their personal best and beyond, to consider the various online safety rules and the use of different IT tools and techniques.

At KS4 our Cambridge National in Information Technologies course improves students' knowledge of the digital environment and their confidence with IT. They learn about data management issues and develop practical skills by planning and creating an integrated technological solution to communicate information.

### **Prepare pupils for "Life beyond Balaam" ...**

- challenges, motivates, inspires and leads to a lifelong interest in learning with a focus on learning key IT skills and basic programming and debugging skills.
- prepares pupils for further education whether academic or vocational and for the world of work.
- develops a set of skills through computational thinking to be applied to any career path a pupil chooses.

### **Promote active community involvement, kindness and collaboration ...**

- ensures pupils are fully prepared for life in their own community and today's society
- developing confident individuals who are able to live safe, healthy and fulfilling lives
- offers a wide range of quality extra-curricular opportunities for personal development

### **King Edward VI Balaam Wood Academy curriculum principles**

At King Edward VI Balaam Wood Academy, it is our intention that our curriculum develops resilience, confidence, self-esteem and a thirst for learning amongst our pupils.

We believe in a curriculum that;

- Adheres to statutory requirements and responds to local, national and international needs
- Is tailored to the individual needs of pupils
- Accelerates the progress of pupils that join below age-related expectation
- Ensures seamless transition
- Promotes a culture of entrepreneurship and widens the opportunities for pupil leadership
- Maximises the opportunities of working in effective collaboration with other schools and maximises the opportunities afforded by the size of our school

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- Provides opportunities to learn beyond the classroom and gain cultural awareness
- Gives pupils an appropriate choice of academic/technical /vocational pathways within a structured system
- Ensures appropriate levels of careers advice and guidance (CIAG)
- Develop a culture where pupils are aspirational for themselves and for each other and enables young people to become successful lifelong learners
- Maximise the benefits of family engagement
- Prioritises reading to allow pupils to access the full curriculum offer
- Is successfully implemented to ensure pupils' progression in knowledge – pupils successfully 'learn the curriculum'

### Curriculum Implementation

#### Through Transition

Pupils do a baseline assessment at the start of year 7 covering a range of topics which enables us to see where they are in terms of their prior knowledge and experience in the subject. The transition and introduction lessons consist of getting to know the Computer room, health and safety rules in a Computer room and how to keep their computer-based work secure by setting a strong password and keeping it a secret.

#### Through Enrichment

We believe learning 'beyond' the classroom is as essential to pupils' development as learning within the classroom, and to ensure our pupils experience a wealth of extracurricular opportunities. Pupils are given the opportunity to be able to work alongside our Network manager where they will be shown the different internal parts of a computer, will take apart a computer system, identify the different parts of a computer and put the computer back together. A lot of our learners are keen to explore the practical side of the network. Therefore, pupils are given the opportunity to work as technical assistant with the Network manager as part of their work experience in KS4. Pupils are also given an opportunity to use a handheld computer called Raspberry Pi in order to program an LED and make it flash by using the programming language Python and they will be able to use microbit using make code (after school club). Pupils are given the opportunity to understand and explore the different courses available to them to enhance their education and career in the field of IT and Computer Science.

#### Through Teaching, Learning and Assessment

At Key Stage three pupils follow the National curriculum and study a broad and balanced range of topics over three years. The Computing and IT curriculum at KS3 is for an 8-week rotation set within the Creative Arts and technology curriculum; pupils have 2 lessons a week. Pupils are also given the opportunity to have 6 lessons as well-being Wednesday sessions in order to further enrich the curriculum.

With new technological jobs emerging constantly that have not previously existed, it is vital that our students are digitally literate, logical and adaptable thinkers who have the knowledge and skills to meet the ever changing and new demands of the future society. Since Computing and Information Technology is

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a broad curriculum which branches out into different GCSE qualifications, like a vocational qualification in Information Technology and a Computer Science qualification, our KS3 curriculum enables pupils to experience and learn elements of both IT and Computer Science.

Lessons are planned carefully to ensure they reflect the school context and builds cultural capital. Learning is sequenced so that new knowledge and skills build on previous teaching and allows for time to recap on the previous topics and reinforce understanding. Based on the Computing at School curriculum, pupils are given the opportunity to explore a range of different units of work:

- Communications and Networks through online safety and cyber bullying work,
- Algorithm, Programming and debugging through block-based unit on Scratch and text based programming using Python,
- Hardware and processing,
- Use of Information Technology which focusses on Digital Literacy and Data representation and data handling using Spreadsheets and Databases.

Pupils work is assessed using the grade descriptors for each unit and pupils are given the opportunity to use a self assessment sheet (in pupil friendly language) at the end of every lesson to assess and understand where they are and what they need to do to bridge the gap and progress.

Extensive and careful planning has gone into developing the KS3 curriculum which ensures that all the key elements are introduced and delivered within the timescale, although the topics could be explored in greater depth with more time allocation at KS3 for the subject.

At Key stage 4, pupils can opt for this subject. Pupils have 5 lessons a fortnight, which is developed by one subject specialist. Currently, all pupils follow the OCR Cambridge Nationals in Information Technology Course. Pupils at our school have successfully completed this course for the last 2 years. I believe it's a suitable course for our pupils as it involves theory, based on how to manage a project, how to collect data and information, threats to data and information and how to protect it and finally how to present information using different software. The course also involves coursework which allows pupils to put the theory into practice by being a project manager and practically handling a project and using project life cycle to manage it. They are also able to put into practice their knowledge and expertise in ensuring that data is kept secure from the identified threats. They also have an opportunity to decide on using a range of different software to manage a given project and do an iterative review at each stage of the project life cycle. Finally, they are also able to evaluate the success of their project by measuring it against the project planning.

OCR Cambridge Nationals in Information Technology Course also provides an excellent foundation for progression to Cambridge Technical and other Level 3 vocational qualifications as well as A levels and apprenticeships.

### Cross curricular links

Communication and Networks project lends itself to a cross-curricular project with English as the pupils will be creating emails and should be encouraged to use correct language skills including spelling, grammar and punctuation. There is also a link with LIFE with the pupils learning about keeping themselves safe when online.

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Programming using Scratch project lends itself to a cross-curricular project with maths as they are creating flow diagrams and using computations thinking skills. They will also be creating different games which have a link to LIFE lessons. Programming using Python unit focuses on creating algorithms and programming and requires the pupils to solve simple mathematical problems in their programming.

Hardware and processing unit focuses on the hardware used in computers and the pupils need to create a presentation about dismantling a computer; therefore, there is a link to literacy and pupils will be encouraged to use correct spelling, punctuation and grammar in their presentation. Binary conversion lends itself to a cross-curricular project with maths or physics as the pupils will be converting denary to binary and binary to denary numbers

Data Handling using spreadsheets project lends itself to a cross-curricular project with maths as the pupils will use calculations and graphs in this unit. As the unit is set in a “spy school”, the pupils also look at the populations and areas of a number of countries in lesson 5 of the unit so this will be linked with geography for that lesson.

Data handling using Databases project lends itself to a cross-curricular project with maths as the students will be using logical operators to find specific data. There is also a link with science as the database is set at a science convention and the pupils will become familiar with different types of scientists and the areas they are studying.

Digital literacy project will have links to:

Literacy: Planning and creating a video to show how to stay safe online and evaluating the video suggesting improvements to be made. Creating a PowerPoint on the different parts of a computer and their functions.  
Numeracy: Learners will use formulas to carry out simple arithmetic in Excel. Creating, labelling and interpreting graphs in Excel

Networks project lends itself to a cross-curricular link with LIFE as the pupils will be looking at the threats to computers and how to avoid viruses, Trojans, worms and spyware.

Lessons at King Edward VI Balaam Wood Academy follow our Balaam Wood Quality Mark 7 model ensuring the following key features are embedded in lessons:

- DNA (Do it now) a review/recall and retrieval practice at the beginning of lessons to support learning - i.e. long-term retention and transfer to memory
- Clear instruction and sequencing concepts; modelling the learning
- Asking questions and checking for understanding with planned opportunities for active learning and collaborative discussion
- Reviewing of previous learning and guiding pupil practice
- A planned reading opportunity and focus on subject vocabulary
- Regular testing and progress checks to assess and check for understanding and set targets for improvement
- Re-teaching where misconceptions or errors have been identified.

These features enable students to effectively retain knowledge and apply it with increasing confidence.

Pupils can achieve reward stickers during lessons which they record in their planner leading to certificates and incentives throughout the school right up to year 11 where they lead to Prom and Yearbook points.

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### Through Home-learning

Home-learning is a key part of the offer at King Edward VI Balaam Wood Academy. It is rigorous, set regularly, followed up and is key to develop successful learning habits.

In Computing and IT - It is used to:

- understand the key technical terms and develop reading skills
- recall and retrieve prior learning.
- repeat a skill independently to encourage mastery.
- consolidate learning.
- deepen and extend learning.
- feed forward to future learning.

A way forward to continue developing this area is the use of knowledge organisers to give key information and then for students to show thorough understanding of the key concepts and practical skills

### Curriculum Impact

The curriculum is successfully implemented to ensure pupils' progression in knowledge – pupils successfully 'learn the curriculum'

The impact of the school's curriculum is measured through several means:

- Outcomes for pupils at GCSE and Vocational GCSES in Y11
- Progress and attainment data for current year groups
- Destinations data
- Attendance data
- Behaviour logs and Attitudes to learning data
- Engagement in enrichment activities
- Pupil and teacher voice
- Progress towards the Gatsby benchmarks
- Faculty reviews and Deep Dives
- Book reviews

Following successful delivery of our curriculum, we expect, and hope pupils leave us with the ability to access a range of careers utilising the skills, knowledge and understanding developed through their time with us. A pupil who is digitally literate can access software packages required in job roles and do so in a safe and effective manner. An understanding of the range of software choices can allow a pupil to make an effective choice. The ability to question 'why' will lead to potential technological advancements and developments in their chosen career path.

Through the development of computational thinking skills, pupils will be able to look at a problem and decompose it into smaller manageable parts, remove unnecessary details (abstraction), look for patterns and finally develop the steps for a solution (algorithm). A skill set that can be applied to many subjects and careers.