Sandhill View

Computing Curriculum Policy

Achieve Aspire Enjoy

Academy Aim

Here at Sandhill View Academy, we aim to securely equip **all** of our students for life beyond school as successful, confident, responsible and respectful citizens. We believe that education provides the key to **social mobility** and our curriculum is designed to build strong foundations in the knowledge, understanding and skills which lead to **academic and personal success**. We want our students to **enjoy** the challenges that learning offers. And ultimately, we want students to '***Know More, Do More and Go Further'***

Our aims are underpinned by a culture of **high aspirations**. Through developing positive relationships, we work towards every individual having a strong belief in their own abilities so that they work hard, build resilience and **achieve** their very best.

Intent

The curriculum includes formal teaching through subject areas, assemblies and extracurricular activities. We regularly review content to ensure we continue to meet our curriculum aims. The ICT and Computing curriculum embeds the Three Pillars of Progression; Computer Science, Information Technology and Digital Literacy. The ICT and Computing curriculum is planned to enable all students to develop:

- Exceptional problem-solving skills
- A High level of competency in regards to computer skills
- Basic knowledge of the difference between ICT and Computing
- Knowledge of effective digital working practices to help understand the way businesses use technology in real-life situations
- Digital literacy skills needed to live, learn, and work in a society where communication and access to information is increasingly through digital technologies
- Passion for the curriculum and interest in future careers in the relevant industries
- Computing driving global changes and knowledge gained is critical for students to exploit opportunities gained in a digital world

Throughout our programmes of study, every attempt is made to make explicit links to careers and the world of work. In addition to subject specific links, we aim to explicitly reinforce the skills and aptitudes which support employers say are important in the workplace;

- Resilience (Aiming High, Staying Positive, Learning from Mistakes)
- Collaboration (Teamwork Leadership Communication)
- Creativity (Originality, Problem Solving, Independent Study)

The British values of democracy, the rule of law, individual liberty, and mutual respect of those with different faiths and beliefs are taught explicitly and reinforced in the way in which the school operates. We are also explicitly embedding transferable 'Skills Builder' skills such as problem solving, staying positive and teamwork to prepare our students for careers and life after school.

Sequence and structure

Our curriculum covers Key Stage 3 (years 7, 8, 9) and is built upon at Key Stage 4 (10 and 11). In Key Stage 3 students are taught topics which are linked to the GCSE specifications. At Key Stage 3, pupils have one lesson of Computing, per week. At Key Stage 4, pupils have six lessons of GCSE option per 2-week timetable.

Covid Recovery to '*unlock learning*'

We have built Covid Recovery into our long and short term planning by including connect activities with lockdown content, revision to focus on topics studied during this period. There will be opportunities for modelling and practice of second order concepts and written skills to support progress. We feel this will help to 'unlock learning'. At KS3 we have focused on embedding a range of IT essential skills which were impacted upon during covid as many students were not able to develop these skills without access to the modern technology available. These skills include folder organisation, saving files, choosing the right software for a project and printing. We have focused on programming languages for Computer Science as many students were unable to access the specialist software from home due to available digital devices.

Literacy

We know that students who read well achieve well. As such all subject areas are committed to providing regular opportunities to read extensively. In Computing we have aspirations for our students to use ambitious vocabulary and are using frayer models and 'push' techniques to widen the tier 2 and tier 3 vocabulary students use orally and in the work they produce. Coherent and fluent writing skills are also imperative for student achievement, so we support student writing skills by offering opportunities for extended writing, with modelling, and sentence stems to support. All curriculum areas use literacy end point document which details yearly end points for reading, writing and oracy to ensure consistent literacy skills embedded across the curriculum.

KNOW MORE: Our Key Stage 3 Computing Curriculum includes the following areas of study:

Three-year KS3 with 1 hour per week allocated to Computing. At KS3 the students follow the National Curriculum Map which is Computer Science (CL), Information Technology (IT) and Digital Literacy (DL).

KS3	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 7	**Baseline Assessment** **Getting Started: IT/DL** Know the processes for logging into the school's network Know the processes for sending and receiving emails Understand how to save, rename and organise files Understand how to access files stored in the cloud Understand key principles of internet safety	**Image Editing: IT** Understand the qualities of vector and bitmap graphics Identify the most appropriate tools to use when editing an image Be able to create and manipulate images	**Introduction to Spreadsheets: IT** Understand how to write basic formulae in a spreadsheet Understand the concept of replication and the uses of relative and absolute cell referencing Understand how to name cells and ranges within a spreadsheet Understand how to write a range of basic functions including sum, average, max, min, count and if Understand how to use conditional formatting Understand how to use data in a spreadsheet to create graphs and charts	**Past, Present & Future: IT/DL** Know about important figures in the development of Computing Understand Moore's Law and how computer technology has developed and changed over time Know how to format documents Understand the importance of aesthetics when presenting information and have an awareness of factors that can inhibit this Select appropriate text and images for use in presentations Design presentations to convey information effectively	**Scratch Programming: CS** Understand the concepts of sequencing, selection and iteration Analyse the requirements of a program Identify the processes needed to solve a problem Design programs in Scratch to solve specific problems	**Components: IT/CS** Know about and understand the function of a range of input and output devices. Know about and understand different types of memory and storage and their use. Identify the correct input and output devices to use in a range of different situations.

Year 8	**Advanced Spreadsheets: IT/CL** *Building upon skills learnt in Year 7: Introduction to Spreadsheets* Understand the structure and use of a range of more advanced functions Understand how to use validation to create drop-down lists Know how to sort data and run simple queries Identify the most appropriate functions to use when developing a spreadsheet for a particular purpose Use of spreadsheets to handle data in a variety of situations proficiently	**Algorithms: CS** Understand the concepts of abstraction, decomposition, pattern recognition and algorithms Know how to read and develop flow diagrams Use the principles of abstraction and decomposition to produce algorithms to solve a range of problems Analyse problems in computational terms ***Completion of Advanced Spreadsheets***	**Turing Lab -Python Programming: CS** *Building upon skills learnt in Year 7: Scratch Programming* Understand a range of basic programming constructs in Python Know how to print to the screen, perform calculations, take inputs and store them in suitably named variables Develop working programs in Python to solve specific problems Use Python confidently to write simple programs ***Completion of Algorithms***	**Internet Safety: DL** Understand a range of malware and the effects they have Know what precautions to take to maintain safety online Demonstrate safe practices when using the internet Understand how to use computer systems safely and confidently ***Completion of Python Programming***	**Internet Safety: DL** Understand the role of encryption in maintaining safety online Know about a range of ciphers Demonstrate safe practices when using the internet Use a range of ciphers to encrypt and decrypt text	**Cyber Security – Cyber Explorers: CS/DL** Understand how technology is relied upon and enhances most industries. Understand the need for digital skills in career roles. Understand how firewalls and encryption are used to protect networks and data. Understand the Internet of Things (IoT), risks and uses. Recognise common security settings, specifically browser/mobile applications.
Year 9	**Binary and Computer Logic: CS** Understand binary and why it is used in computing Know how to convert between denary and binary Understand how binary is used to encode text and images Understand the concept of AND, OR and NOT gates and their use in computer programs Carry out binary/denary conversions Encode and decode text and images in binary Identify the output from simple logic circuits	**Networking and the Internet: CS/IT** Understand how data is sent across a network Know the role of a range of basic hardware involved in networking, such as switches Understand the role of IP addresses Understand domain names and DNS Know about a range of internet services	**Python Programming – Chat Bot: CS** *Building upon skills learnt in Year 8: Python Programming* Understand a range of intermediate programming constructs in Python Know how to use Python input and output to create a digital conversation. Use lists and data types to store information and calculate carbon emissions. Manipulate strings to create cyber secure usernames and passwords. Develop working programs in Python to solve specific problems Identify the processes needed to solve a problem	**Ethics of Computing: DL/IT** Understand the importance of respecting copyright Make informed judgements about whether activities are morally acceptable or not Ensure that copyright has not been infringed when using resources found online Store data safely with regard to current legislation Consider the ethical implications of using modern information technologies Research resources online, being mindful of copyright considerations and acknowledging sources Use modern information technologies responsibly	**Cyber Security – Cyber Explorers: DL/CS** *Building upon skills learnt in Year 8: Cyber Security* Recognise common types of malware and delivery methods. Understand what can be done to protect against malware. Recognised threat groups and their motivations. Understand methods of authentication including passwords and multi-factor authentication (MFA). Recognise social engineering techniques used by cyber-criminals.	**Spreadsheet Skills: IT** *Building upon skills learnt in Year 8: Advanced Spreadsheets* Understand the structure and use of a range of more advanced functions Understand the use of macros to automate processes and know how to record, edit and assign macros Identify the most appropriate functions to use when developing a spreadsheet for a particular purpose Use of spreadsheets to handle data in a variety of situations proficiently Interpret data from spreadsheets.

KNOW MORE: Our Key Stage 4 Curriculum

The KS4 Curriculum is taught over 2 years. At Key Stage 4 Year 10 and 11 students will be studying BTEC Tech Awards Digital Information Technology. With each class having 3 hours of BTEC DIT per week taught in mixed ability groups.

KS4	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 10 BTEC DIT	**Component 1: Exploring User Interface Design Principles and Project Planning Techniques** User interfaces - Learners will understand the use of different types of user interface and how they vary across different uses, devices and purposes Audience needs - Learners will understand the varying needs of the audience and how they affect both the type and the design of the interface. Design principles - Learners will understand how design principles provide both appropriate and effective user interaction with hardware devices. Designing an efficient user interface - Learners will understand the techniques that can be used to improve both the speed and access to user interfaces Creating a project proposal and plan - Learners will understand project planning techniques used to develop a project proposal and project plan for the development of a user interface for a given brief.	**Component 1: Pre-Set Assignment Task 1a** Project planning techniques - Learners will understand the use of different planning tools and design methodologies that can be used to plan, monitor and execute projects. **Component 1: Pre-Set Assignment Task 1b** Creating an initial design - Learners will understand how to produce an initial design using design principles **Component 1: Pre-Set Assignment Task 2** Developing a user interface - Learners will understand how to use their design to produce a user interface. **Component 1: Pre-Set Assignment Task 3** Review Learners will understand how to review the success of the user interface and the use of their chosen project planning techniques. **Component 1: Pre-Set Assignment Task 4**	**Component 2: Collecting, Presenting and Interpreting Data** Characteristics of data and information - Learners will understand the concepts of data and that data is meaningless without converting it into information by adding structure and context. Representing information - Learners will understand the different ways of representing information and will be able to explain situations where they would be used. Ensuring data is suitable for processing - Learners will understand the methods that can be used to ensure data input is suitable and within boundaries so that it is ready to be processed. Data collection Learners will understand the different types of data collection methods, the strengths and weaknesses of each, how data collection features affect its reliability and how the collection of data could be improved. Quality of information Learners will understand the factors that affect the quality of information.	Data processing methods - Learners will understand how data can be imported from an external source. They will then explore how to accurately apply data processing methods to aid decision making. **Component 2: Pre-Set Assignment Task 2a & b** Producing a dashboard - Learners will use a dashboard to select and display information summaries based on a given data set. **Component 2: Pre-Set Assignment Task 2c** Drawing conclusions based on findings in the data - Learners will use a dataset and dashboard to present findings and draw conclusions based on their findings. **Component 2: Pre-Set Assignment Task 3a** How presentation affects understanding - Learners will investigate how well the presentation methods and features have been used. **Component 2: Pre-Set Assignment Task 3b**	**Component 3: Effective Digital Working Practices** **Planning and communication in digital systems** Learners should be able to interpret and use standard conventions to combine diagrammatical and written information to express an understanding of concepts.	**Component 3: Effective Digital Working Practices** **Responsible use** Learners should consider the responsible use of digital systems, including how systems and services share and exchange data as well as the environmental considerations of increased use. **Legal and ethical** Learners should understand the scope and purpose of legislation (valid at time of delivery) that governs the use of digital systems and data, and how it has an impact on the ways in which organisations use and implement digital systems. Learners should understand the wider ethical considerations of use of technologies, data and information, and organisations' responsibilities to ensure that they behave in an ethical manner.

			Threats to individuals Learners will understand the different threats that face individuals who have data stored about them. **Component 2: Pre-Set Assignment Task 1**			
Year 11 BTEC DIT	**Component 3: Effective Digital Working Practices – Resit preparation** **Units covered based on exam analysis** **Modern technologies** Learners should understand how and why modern technologies are used by organisations and stakeholders to access and manipulate data, and to provide access to systems and tools in order to complete tasks. Learners should understand the implications of these tools and technologies for organisations and stakeholders. **Modern technologies** Learners should understand how and why modern technologies are used by organisations and stakeholders to access and manipulate data, and to provide access to systems and tools in order to complete tasks. Learners should understand the implications of these tools and technologies for organisations and stakeholders.	**Component 3: Effective Digital Working Practices** **Threats to data** Learners should understand why systems are attacked, the nature of attacks and how they occur, and the potential impact of breaches in security on the organisation and stakeholders. **Prevention and management of threats to data** Learners should understand how different measures can be implemented to protect digital systems. They should understand the purpose of different systems and how their features and functionality protect digital systems. Learners should understand how one or more systems or procedures can be used to reduce the nature and/or impact of threats. **Policy** Learners should understand the need for and nature of security policies in organisations. They should understand the content that constitutes a good security policy and how it is communicated to individuals in an organisation. To ensure that potential threats and the impact of	**Component 3: Effective Digital Working Practices – GCSE Examination January** **Units covered based on exam analysis**	**Component 3: Effective Digital Working Practices – Resit preparation** **Units covered based on exam analysis**	**Component 3: Effective Digital Working Practices – Resit preparation** **Units covered based on exam analysis**	**Component 3: Effective Digital Working Practices – Resit preparation** **Units covered based on exam analysis**

		security breaches are minimised, Learners should understand how procedures in security policies are implemented in organisations.				

DO MORE: Milestone assessment end points Unit specific substantive, and disciplinary knowledge, and skill end points are detailed of individual schemes of learning

Year Group	Basic (Lower Ability End Points)	Clear (Middle Ability End Points)	Detailed (Higher Ability End Points)
7	• Pupils will design, use and evaluate simplistic spreadsheet models; that model the state and behaviour of some real-world problems. • Pupils will show limited application of block-based programming, to solve a basic computational problem; making limited use of data structures. • Pupils will design and develop modular programs that use procedures or functions with limited independent programming. • Pupils will show limited understanding of simple Boolean logic and some of its uses in circuits and programming. • Pupils will show limited understanding of the basic hardware and software components that make up computer systems. • Pupils will show limited understanding of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy. Pupils will show limited knowledge of inappropriate content, contact and conduct, and how to report concerns. • Pupils will show limited understanding of 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. • Pupils will show limited ability to create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.	• Pupils will design, use and evaluate mostly well-developed spreadsheet models; that mostly model the state and behaviour of real-world problems and physical systems. • Pupils will show good application of block-based programming, to solve a mostly well-developed computational problem; making good use of data structures. • Pupils will design and develop modular programs that use procedures or functions mostly independently. • Pupils will show good understanding of simple Boolean logic and some of its uses in circuits and programming. • Pupils will show good understanding of most of the hardware and software components that make up computer systems; and how they communicate with one another. • Pupils will show good understanding of a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy. Pupils will show good knowledge of inappropriate content, contact and conduct, and how to report concerns. • Pupils will show good understanding of 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. • Pupils will show good ability to create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.	• Pupils will design, use and evaluate well-developed spreadsheet models; that fully model the state and behaviour of real-world problems and physical systems. • Pupils will show a comprehensive application of block-based programming, to solve a well-developed computational problem; making sound use of data structures. • Pupils will design and develop modular programs that use procedures or functions independently. • Pupils will show comprehensive understanding of simple Boolean logic and some of its uses in circuits and programming. • Pupils will show comprehensive understanding of a wide range of hardware and software components that make up computer systems, and how they communicate with one another and with other systems • Pupils will show comprehensive understanding of a wide range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy. Pupils will show comprehensive knowledge of inappropriate content, contact and conduct, and how to report concerns. • Pupils will show comprehensive understanding of 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. • Pupils will show comprehensive ability to create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.
8	• Pupils will show limited understanding how numbers can be represented in binary, and be able to carry out basic operations on binary numbers; for example, conversion between binary and decimal. • Pupils will show limited understanding of the basic hardware and software components that make up computer systems. • Pupils will undertake creative projects that involve selecting, using, and combining a limited	• Pupils will show good understanding 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. • Pupils will show good understanding of most of the hardware and software components that make up computer systems; and how they communicate with one another.	• Pupils will show comprehensive understanding how numbers can be represented in binary, and be able to carry out a wide range of operations on binary numbers; for example, binary addition, binary shift, and conversion between binary and decimal. • Pupils will show comprehensive understanding of a wide range of hardware and software components that make up computer systems, and how they communicate with one another and with other systems

Year Group	Basic (Lower Ability End Points)	Clear (Middle Ability End Points)	Detailed (Higher Ability End Points)
	amount of applications, to achieve basic goals, including meeting the basic needs of a known user. • Pupils will show limited ability to design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. • Pupils will show limited understanding of 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. • Students will show limited ability to use a text-based programming language, 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. • Pupils will show limited understanding of 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.	• Showing good understanding of how data of various types can be represented and manipulated digitally. • Pupils will undertake creative projects that involve selecting, using, and combining a range of applications, to achieve clear goals, including mostly meeting the needs of a known user. • Pupils will show good ability to design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. • Pupils will show good understanding of 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. • Students will show good ability to use a text-based programming language, 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. • Pupils will show good understanding of 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.	• Showing comprehensive understanding of how data of various types can be represented and manipulated digitally, in the form of binary digits. • Pupils will undertake creative projects that involve selecting, using, and combining a range of applications, to achieve clear goals, including fully meeting the needs of a known user. • Pupils will show comprehensive ability to design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. • Pupils will show comprehensive understanding of 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. • Students will show comprehensive ability to use a text-based programming language, 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. • Pupils will show comprehensive understanding of 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.
9	• Pupils will show limited ability to design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. • Pupils will demonstrate limited understanding of 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. • Pupils will show limited ability to 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. • Pupils will demonstrate limited understanding of 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]. • Pupils will demonstrate limited understanding of the hardware and software components that make up	• Pupils will show good ability to design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. • Pupils will demonstrate good understanding of 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. • Pupils will show good ability to 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. • Pupils will demonstrate good understanding of 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]. • Pupils will demonstrate good understanding of the hardware and software components that make up	• Pupils will show comprehensive ability to design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. • Pupils will demonstrate comprehensive understanding of 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. • Pupils will show comprehensive ability to 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. • Pupils will demonstrate comprehensive understanding of 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]. • Pupils will demonstrate comprehensive understanding of the hardware and software

Year Group	Basic (Lower Ability End Points)	Clear (Middle Ability End Points)	Detailed (Higher Ability End Points)
	computer systems, and how they communicate with one another and with other systems. • Pupils will demonstrate limited understand of 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. • Pupils will show limited ability to 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. • Pupils will demonstrate limited understanding of 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.	computer systems, and how they communicate with one another and with other systems. • Pupils will demonstrate good understand of 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. • Pupils will show good ability to 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. • Pupils will demonstrate good understanding of 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.	components that make up computer systems, and how they communicate with one another and with other systems. • Pupils will demonstrate comprehensive understand of 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. • Pupils will show comprehensive ability to 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. • Pupils will demonstrate comprehensive understanding of 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.
10	• Pupils will show limited application of relevant project proposal methods. • Pupils will show limited application of project planning tools to plan the timeline of the project. • Pupils will show limited application of relevant user interface design methods and design principles. • Pupils will show limited application of user interface development. • Pupils will show limited justified review of the user interface. • Pupils will explain how data collection methods and their features affect the quality of data across two sectors, with relevant examples. • Pupils will explain how data is used to make decisions across two sectors, with relevant examples. • Pupils will select and use methods to carry out some manipulation of data, which is largely accurate. • Pupils will produce an appropriate dashboard that clearly summarises data. • Pupils will use the dashboard to draw conclusions, with some appropriate recommendations. • Pupils will explain the methods used to present data so that it can be clearly understood, with detailed examples.	• Pupils will show good application of relevant project proposal methods. • Pupils will show good application of project planning tools to plan the timeline of the project. • Pupils will show good application of relevant user interface design methods and design principles. • Pupils will show good application of user interface development methods. • Pupils will show good justified review of the user interface. • Pupils will discuss data collection methods and features used and how they affect the quality of data and decision making in two sectors, drawing justified conclusions. • Pupils will select and use relevant methods to effectively and accurately manipulate data and produce an effective dashboard that clearly summarises data. • Pupils will analyse how the dashboard's presentation of data influences the conclusions drawn and the recommendations made, using relevant examples.	• Pupils will show comprehensive application of relevant project proposal methods. • Pupils will show comprehensive application of project planning tools to plan the timeline of the project. • Pupils will show comprehensive application of relevant user interface design methods and design principles. • Pupils will show comprehensive application of user interface development methods. • Pupils will show comprehensive justified review of the user interface. • Pupils will assess data collection methods and features used and how they affect the quality of data and decision making in two sectors, drawing detailed justified conclusions. • Pupils will select and use relevant methods to effectively and accurately manipulate data. • Pupils will produce a fully efficient and comprehensive dashboard. • Pupils will assess the effectiveness of the dashboard's presentation of data and how it affects the conclusions drawn and the recommendations made, using justified examples
11	Pupils will show limited understanding of how organisations use digital systems and the wider implications associated with their use. Pupils will be able to: • Describe setting up and using ad hoc networks. • Describe changes to modern teams facilitated by modern technologies. • Describe how modern technologies can be used to manage modern teams.	Pupils will show good understanding of how organisations use digital systems and the wider implications associated with their use. Pupils will be able to: • Describe security issues with open networks. • Be able to select the appropriate communication channels for sharing information, data and media with stakeholders. • Describe features and uses of cloud storage including setting and	Pupils will show comprehensive understanding of how organisations use digital systems and the wider implications associated with their use. Pupils will be able to: • Describe performance issues with ad hoc networks and issues affecting network availability/ • Describe the positive and negative impacts of modern technology on organisations in terms of inclusivity, accessibility and remote working.

Year Group	Basic (Lower Ability End Points)	Clear (Middle Ability End Points)	Detailed (Higher Ability End Points)
	• Describe how organisations use modern technologies to communicate with stakeholders. • Describe features and uses of cloud storage including synchronisation of cloud and individual devices and availability (24/7). • Describe features and uses of cloud computing including online applications and collaboration tools/features. • Describe how notifications are used in cloud and traditional systems. • Understand why systems are attacked. • Describe the external threats virus, Trojan, phishing and shoulder surfing. • Understand the internal threats of stealing or leaking information, overriding security controls and downloads from the internet and untrustworthy websites. • Understand the impact of security breaches including data and financial loss. • Describe user access restrictions including physical security measures and passwords. • Understand how computers are protected with anti-virus software • Understand how backups are used to recover data. • Explain how data is shared between organisations. • Understand the responsible use of data with respect to privacy. • Understand the impact of manufacture, use and disposal of IT systems on the environment. • Understand the importance of providing equal access to digital services and information. • Understand the purpose and use of acceptable use policies • Understand Data protection principles • Understand the criminal use of computer systems including unauthorised access and modification of materials. • Interpret a simple data flow diagram • Interpret an information flow diagram • State the use of a flowchart • Draw a simple flowchart to describe the steps in an activity or process • Follow a simple flowchart to show what the output will be	sharing of access rights and scalability. • Describe features and uses of cloud computing including consistency of versions between users and single shared instances of files. • Describe how the selection of platforms and services impacts on the use of cloud technologies including the number and complexity of features, paid for vs free, interface design and available devices. • Describe how cloud and traditional systems are used together including device synchronisation and online/offline working. • Consider the implications for organisations when choosing cloud technologies, including: disaster recovery policies, security of data, compatibility, maintenance, getting a service/storage up and running quickly and performance considerations. • Describe how modern technologies aid inclusivity and accessibility, including interface design, accessibility features and flexibility of work hours and locations. • Describe the positive and negative impacts of modern technologies on organisations in terms of 24/7 access, collaboration, inclusivity, accessibility and remote working. • Describe positive and negative impacts on modern technologies on individuals, including flexibility, working styles and impact on individual wellbeing. • Explain the term 'black hat' hacker. • Describe the external threats worms, botnet, rootkit, ransomware, spyware, social engineering and 'man-in-the-middle' attacks. • Understand the internal threats from unintentional disclosure of data and portable storage devices. • Understand the impact of security breaches including damage to public image and reduction in productivity and downtime. • Describe user access restrictions including user settings, biometrics and two-factor authentication. • Explain the use of ethical hacking and white hat hackers. • Understand the use of penetration testing to improve system security. • Understand how computers are protected with firewalls, interface design and encryption. • Be able to state those responsible for cyber security and policy. • Discuss typical components of password policies and acceptable use policies. • Explain how data is recovered. • Explain the actions taken after a cyber-attack. • Explain how location-based data and transactional data are shared between organisations. • Explain the function of cookies. • Be able to describe the benefits and drawbacks of using shared data.	• Describe positive and negative impacts of modern technologies on organisations in terms of required infrastructure, demand on infrastructure of chosen tools/platforms, availability of infrastructure, security of distributed/disbursed data. • Describe with the aid of a diagram the external threats Denial of Service, botnet and pharming. • Understand the legal implications of computer misuse. • Explain the term grey hat. • Understand the use of system and behaviour analysis to improve system security. • Understand how encryption is used to secure files, drives and transmitted data. • Explain a number of ways in which software can be designed to improve security. • Give a number of parameters that can be made for device hardening. • Give clear actions which will be taken after a cyber-attack and the people who will be involved in these actions. • Explain how data is exchanged between services. • Be able to discuss the ethical use of data. • Evaluate the environmental considerations when upgrading or replacing computers. • Be aware of the legal requirements and professional guidelines regarding equal access. • To understand the impact of net neutrality on organisations. • Draw and interpret a more complex data flow diagram. • Explain the use of a system diagram. • Draw a system diagram.

Year Group	Basic (Lower Ability End Points)	Clear (Middle Ability End Points)	Detailed (Higher Ability End Points)
		• Understand the responsible use of data with respect to legal considerations. • Explain the energy saving settings and policies available for digital devices. • Identify the benefits to organisations, individuals and society of equal access. • To understand net neutrality. • To be aware of the blurring of social and business boundaries. • To be aware of the use of data on the internet. • To develop understanding of intellectual property. • To understand the criminal use of computer systems including creation and spreading of malware. • Explain the use of a data flow diagram. • Draw a simple data flow diagram. • Draw an accurate flowchart representing a more complex scenario or algorithm. • Describe the advantages of presenting data in a graph or chart rather than a table of figures. • Give a written explanation of figures in a table or graph.	

GO FURTHER: Skills Builder

We are also explicitly embedding transferable 'Skills Builder' skills such as problem solving, aiming high and teamwork to prepare our students for higher education and employability skills for the future. This year in Computing we will focus on **TEAMWORK** including group decision making and recognising the value of others. **PROBLEM SOLVING** by exploring complex problems by analysing cause and effect, and understanding through practical challenges. Furthermore, we want our students **STAYING POSITIVE**.

How does our Curriculum cater for students with SEND?

Sandhill View is an inclusive academy where every child is valued and respected. We are committed to the inclusion, progress and independence of all our students, including those with SEN. We work to support our students to make progress in their learning, their emotional and social development and their independence. We actively work to support the learning and needs of all members of our community.

A child or young person has SEN if they have a learning difficulty or disability which calls for special educational provision to be made that is additional to or different from that made generally for other children or young people of the same age. (CoP 2015, p16)

Teachers are responsible for the progress of ALL students in their class and high-quality teaching is carefully planned; this is the first step in supporting students who may have SEND. All students are challenged to do their very best and all students at the Academy are expected to make at least good progress.

Specific approaches which are used within the curriculum areas include:

- Seating to allow inclusion
- Differentiation activities to stretch and support in all lessons
- Resources are accessible yet challenging
- Displays and visual learning tools are used where necessary
- Where appropriate support from additional adults is planned to scaffold students learning

- Group work and discussion
- Clear teacher/student communication
- Feedback that allows students to make progress, whether written or verbal
- Independent study
- Intervention when required

How does our curriculum cater for disadvantaged students and those from minority groups?

As a school serving an area with high levels of deprivation, we work tirelessly to raise the attainment for all students and to close any gaps that exist due to social contexts. The deliberate allocation of funding and resources has ensured that attainment gaps are closing in our drive to ensure that all pupils are equally successful when they leave the Academy. More specifically within the teaching of Computing, we;

- work to identify barriers, interests and what might help each pupil make the next steps in learning using lead practitioner research and actions to support.
- provide targeted support for under-performing pupils during lesson time, such as targeted questioning, live marking and seating, in addition to revision lessons and intervention outside school hours.
- use strategies best suited to addressing individual needs
- Ensure there are opportunities for students to make use of resources and gain homework support outside of lesson time through the use of Teams
- Provide students with revision materials to reduce financial burden on families
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How do we make sure that our curriculum is implemented effectively?

- The Computing lead teacher is responsible for designing the Computing curriculum and monitoring implementation.
- The subject leader's monitoring is validated by senior leaders.
- Staff have regular access to professional development/training to ensure that curriculum requirements are met and subject knowledge developed
- Effective assessment informs staff about areas in which interventions are required. These interventions are delivered during curriculum time to enhance pupils' capacity to access the full curriculum.
- Curriculum resources are selected carefully and reviewed regularly.
- Assessments are designed thoughtfully to assess student progress, long term knowledge retrieval and also to shape future learning.
- Assessments are checked for reliability within departments and across the Trust.

We have staff who mark for exam boards to ensure reliability of data. There is frequent contact with exam boards (OCR, Pearson & NCCE) to ensure that the relevant and up to date content, courses and topics are being taught across all key stages.

GAP analysis is used throughout the assessment process. This then helps us to identify the pupils who are most in need of intervention sessions.

How do we make sure our curriculum is having the desired impact?

- Examination results analysis and evaluation
- Termly assessments based upon prior learning for retrieval-analysis and evaluation meetings
- Lesson observations
- Learning walks for KS3 and KS4 based upon departmental priorities
- Work sample for each year group cross referenced against milestone assessment end points
- Regular feedback from teaching staff during department meetings
- Regular feedback from Middle Leaders during curriculum meetings
- Pupil Surveys
- Parental feedback