SUBJECT: ICT KS4

CURRICULUM PLAN

I have come so that they may have life and have it to the full

John 10: Chapter 10. V 10.

Inspired by the Gospel values of love, joy and compassion, we nurture and develop the whole child so that each unique individual grows in confidence and has the knowledge and skills to enable them to achieve their true potential.

All children will have access to a rich, ambitious curriculum which fosters curiosity, creativity and a love of life-long learning. It will prepare them well for the next stage of education, employment or training and enable them, as educated citizens, to contribute to creating a better world.

Information Technology is delivered in the hope to inspire students who are interested in an introduction to the study of creating IT systems to manage and share information alongside other fields of study, with a view to progressing to a wide range of higher education courses, not necessarily in IT. Students will develop a common core of IT knowledge and study areas such as the relationship between hardware and software that form an IT system, managing and processing data to support business and using IT to communicate and share information. In addition to helping students acquire subject knowledge, the course is designed to develop the following skills:

- cognitive and problem-solving skills: use critical thinking, approach non-routine problems applying expert and creative solutions, use systems and technology
- Intrapersonal skills: communicating, working collaboratively, negotiating and influencing, self-presentation
- Interpersonal skills: self-management, adaptability and resilience, self-monitoring and development.

The National Curriculum

We have not deviated from the National Curriculum in this subject.

By the end of 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 2 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, reuse, revise and repurpose 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

*Taken from Computing NC for KS3

IT Department Catholic social teaching principles

Participation in society

The IT Department at St Edmunds Catholic School is dedicated to inspiring each and every student to achieve their academic potential. It also seeks to help young people develop life skills, through computing competency and helping them to become computer literate in order function in our ever-changing digital age. Students are encouraged to explore the internet to seek out information to help further comprehension in all subjects, and to develop insight as to what is a good resource and what is not so reliable. We will provide a broad and balanced curriculum that is accessible to all pupils. All students will have the opportunity to develop a high level of computer competency required for success in adult life. We will ensure that all pupils are able to thrive and develop as computer literate individuals.

Human Dignity

Digital Dignity pertains to the inherent right of individuals to maintain control over the digital identity, data, and online interactions, ensuring these are respected and protected within the digital sphere. Students have the opportunity and are given the knowledge to uphold their digital dignity.

Preferential option for the poor

We provide revision resources for all students, so they are not required to purchase revision guides. We also provide lunchtime, afterschool and holiday intervention so that no student is disadvantaged. We foreground the disadvantaged when teaching.

Solidarity

We offer the students opportunities to work in groups; this enables them to participate in discussions with their peers. We include activities such as think, pair share which encourage discussions with their peers, and builds teamwork skills.

The Common good

This refers to the application of IT to benefit society, often by promoting access to information, fostering collaboration, enabling democratic participation, and addressing public needs through digital platforms and technologies. IT can provide broad access to educational resources, transforming lives through accessible and impactful learning experiences.

Promoting Peace

Every student has the right to be in a safe and loving classroom environment where they can express their own opinion. It is the responsibility for the teacher to facilitate this. Every student has the right to a peaceful calm environment where they can express their thoughts without feeling unsafe and this is thoroughly promoted when we teach IT.

Subsidiarity

In IT students apply the principle of subsidiarity by making decisions, designing, and implementing those solutions. The teaching and homework provide ample opportunity for this so that all students become autonomous learners so that they become responsible for their learning.

Stewardship

Stewardship for IT means using technological gifts responsibly and ethically to serve the common good and the dignity of all people, including future generations. Our IT curriculum ensures IT benefits all, especially the vulnerable, by promoting justice and a sustainable future, rather than being used for exploitation, resource depletion, or environmental harm.

Distributive justice
The fair and equitable sharing of worldly resources, ensuring everyone's basic needs are met so they can achieve their full human potential. In IT we evaluate systems to see if they foster conditions for all to thrive, rather than allowing exploitation or the concentration of wealth and power.

SUBJECT KEY CONCEPTS / COMPOSITES	
Key Stage 3	Computational thinking, Decomposition, Pattern recognition, Abstraction, Algorithms, designing an algorithm, Searching, Sorting, Sequencing, Selection, Iteration, Logical reasoning, Binary, Representing text, images and sound, Digital devices, Software, The CPU and the fetch-execute cycle, Introduction to networks, Online safety, Bias and reliability and law and ethics.
Key Stage 4	• Design tools: Types of design tools. • Human Computer Interfaces in everyday life: The purpose, importance and use of HCI in everyday life, The purpose, importance and use of HCI in application areas, Hardware considerations, Software considerations, User interaction methods. • Data and testing: Information and data, Data use, Use of data types in different contexts, Validation and verification, Data validation tools, Data verification tools, Data collection methods, Storage of collected data, Application of testing to a range of contexts, Importance and purpose of testing, Test data, Types of Testing. • Cyber security and legislation: Threats, The impact of a cyber security attack on individuals and organisations, Prevention Measures, Legislation related to the use of IT systems. • Digital communications: Types, Software, Digital devices, Distribution channels, Types of distribution channel, Distribution channel connectivity, Audience demographics: • Internet of Everything (IoE), Use of IoE , Application areas in everyday life.

	Year 10	Year 11
Knowledge	***Pupils will know:*** **1.1 Design Tools** – Learners will investigate a range of design tools used throughout the planning and development process, including flowcharts, mind maps, visualisation diagrams and wireframes. They will understand the purpose, components, advantages and limitations of each tool, identify suitable software for creating them, and produce original design documentation appropriate to a given scenario. • **2.1 Human Computer Interaction (HCI)** – Learners will understand the purpose and importance of Human Computer Interaction within a range of everyday contexts, including banking, embedded systems, entertainment, fitness, home appliances and retail. They will evaluate how effective HCI improves usability and user experience across different application areas. • **2.2 Hardware Considerations** – Learners will understand how hardware characteristics, including device type, display size, memory and processing power, influence the design and functionality of Human Computer Interfaces. They will evaluate the advantages and disadvantages of different hardware solutions when designing digital systems. • **2.3 Software Considerations** – Learners will investigate how operating systems and digital platforms, including Windows, macOS, iOS, Android, ChromeOS, Linux, databases, mobile applications, spreadsheets and websites, influence interface design. They will understand how software environments affect the development and usability of digital solutions. • **2.4 User Interaction Methods** – Learners will investigate a variety of interaction methods, including keyboard, mouse, touch, gesture and voice control. They will understand how different interaction methods influence accessibility, usability and the overall user experience.	***Pupils will know:*** • **4.1 Cyber Security Threats and Attack Types** – Learners will investigate a range of cyber security threats including denial of service (DoS) attacks, different types of hackers (black hat, grey hat and white hat), malware (including adware, botnets, ransomware, spyware, trojans, viruses and worms), and social engineering techniques (including phishing, baiting, pretexting, quid pro quo, scareware and shoulder surfing). They will understand how each threat operates, why it is used, how it can occur, and methods used to mitigate or prevent such threats. • **4.2 Impacts of Cyber Security Attacks** – Learners will understand the impact of cyber attacks on both individuals and organisations, including data destruction, manipulation, modification, theft (in transit and at rest), denial of service, and identity theft. They will consider how these impacts affect security, operations, reputation and individuals' personal data. • **4.3 Cyber Security Prevention Methods** – Learners will investigate a range of physical and logical security measures used to protect systems and data. This includes biometric systems, firewalls, keypads, RFID, access rights and permissions, antivirus and anti-malware software, two-factor authentication, encryption, secure backups, usernames and passwords, and methods of secure data destruction such as data erasure, data sanitisation, magnetic wiping and physical destruction. They will understand how these measures work and how they reduce or prevent security risks. • **4.4 Legislation and Digital Regulation** – Learners will investigate key legislation relevant to the use of IT systems, including the Computer Misuse Act, Copyright, Designs and Patents Act, Data Protection Act, Freedom of Information Act and Health and Safety at Work Act. They will understand the purpose of each piece of legislation, the responsibilities of individuals and

	• **3.1 Data and Information** – Learners will understand the relationship between data and information and explain how raw data is processed into meaningful information to support decision making. • **3.2 Data Types, Validation and Verification** – Learners will understand the characteristics and appropriate use of common data types, including alphanumeric, Boolean, date, numeric and text. They will distinguish between validation and verification, investigate a range of validation and verification methods, and justify their use in reducing user error and improving data accuracy. • **3.3 Data Collection** – Learners will investigate primary and secondary methods of data collection, evaluating their advantages, disadvantages and suitability for different scenarios. • **3.4 Data Storage** – Learners will understand logical and physical storage locations together with the characteristics, advantages and limitations of a range of storage devices used to manage collected data. • **3.5 Testing** – Learners will understand the importance of testing throughout the development process. They will investigate different forms of test data, including valid, invalid and extreme data, together with technical and user testing methods, evaluating their role in producing reliable and effective digital solutions. • **6.1 Internet of Everything (IoE)** – Learners will investigate the principles of the Internet of Everything, including its four pillars, digital interactivity and the relationship between connected devices, people, processes and data. They will understand how interconnected technologies are designed to meet user needs while recognising the benefits and challenges associated with emerging technologies. • **6.2 Applications of the Internet of Everything** – Learners will investigate how the Internet of Everything is used across a range	organisations, and the implications of non-compliance. Learners will also consider how legislation applies to real-world cyber security issues and understand the importance of staying up to date with changes in digital law. • **5.1 Digital Communication Types** – Learners will investigate a range of digital communication methods including audio, collaboration tools, leaflets, infographics, newsletters, presentations, reports, social media, video, VoIP and websites. They will understand the purpose, advantages and disadvantages of each method and evaluate their suitability for different audiences and contexts. use of a digital communication applied to a given context. • **5.2 Software for Digital Communication** – Learners will explore desktop publishing software and standard office applications used to create digital communications. They will understand the features and characteristics of different software tools and select appropriate software to meet specific user requirements. • **5.3 Digital Devices** – Learners will investigate a range of digital devices including smartphones, smart TVs, PCs/laptops, tablets and smartboards. They will understand the characteristics of each device and evaluate their suitability for producing and consuming digital communications. • **5.4 Distribution Channels and Connectivity** • **5.4.1 Distribution Channels** – Learners will investigate different methods of distributing digital content, including cloud platforms, email, messaging systems, mobile apps, multimedia platforms, VoIP and websites. They will understand the advantages and disadvantages of each channel and evaluate their suitability for different audiences and purposes. • **5.4.2 Connectivity Methods** – Learners will investigate connectivity options used to deliver digital content, including 4G/5G, Wi-Fi, Bluetooth, mobile hotspots and wired connections. They will understand the characteristics, benefits

	of sectors, including energy management, healthcare, manufacturing, emergency services, transport and smart technologies. They will evaluate the suitability, benefits, limitations and security implications of connected systems within these application areas. ***We have chosen to teach this knowledge because…*** Digital technologies underpin almost every aspect of modern life, with organisations increasingly relying on well-designed digital systems to collect data, support decision making and improve the experience of end users. As technology continues to evolve, learners require a secure understanding of how digital solutions are planned, designed, tested and implemented to meet a wide range of user needs. This component develops learners understanding of the principles that underpin effective digital design, from the use of design tools and Human Computer Interaction (HCI) to the collection, validation, storage and testing of data. Learners also explore how hardware, software and user interaction methods influence the usability and accessibility of digital systems, enabling them to appreciate the importance of designing solutions that are both functional and user-centred. By studying emerging technologies such as the Internet of Everything (IoE), learners gain an understanding of how interconnected devices are transforming homes, businesses and public services, whilst recognising the opportunities and security challenges that accompany technological innovation. The knowledge and analytical skills developed throughout this component provide a strong foundation for further study in computing and digital technologies, while also preparing learners with transferable skills that are highly valued across a wide range of industries and future careers.	and limitations of each method and make informed decisions about their use in different contexts. • **5.5 Audience Demographics** – Learners will understand how audience demographics influence the design, selection and delivery of digital communications. They will evaluate how digital communication methods, distribution channels and connectivity choices must be adapted to meet the needs of different user groups. ***We have chosen to teach this knowledge because…*** Modern society is increasingly dependent on digital systems to store, process and communicate information. As a result, individuals and organisations must be able to use technology safely, effectively and responsibly in order to protect data, communicate information clearly and make informed decisions. In this component, learners develop an understanding of the range of cyber security threats that exist in today's digital world, including malware, social engineering and denial of service attacks, alongside the potential impact these threats can have on individuals and organisations. This ensures learners are aware of the risks associated with digital systems and understand how security breaches can affect privacy, operations and trust. Learners also explore the methods used to prevent and respond to cyber security threats, including both physical and logical security measures, as well as relevant legislation that governs the use of IT systems and data. This provides an essential understanding of how organisations protect information and remain compliant with legal requirements. In addition, learners investigate how digital communication is created, selected and distributed using a range of software, devices and connectivity methods. They will understand how audience needs and demographics influence the design and delivery of digital

		content, ensuring that communication is appropriate, accessible and effective. This component equips learners with essential knowledge of digital safety, communication and responsibility, preparing them to engage confidently with technology in further study, employment and everyday life in an increasingly connected world.
Skills	Knowledge and Understanding • Demonstrate knowledge of key concepts in digital information technology, including design tools, Human Computer Interaction (HCI), data handling, testing, and emerging technologies such as the Internet of Everything (IoE). • Explain key terms, processes and issues associated with digital systems and their use in real-world contexts. Application of Knowledge and Skills • Apply understanding of design tools to plan and communicate ideas effectively using appropriate techniques such as flowcharts, mind maps, visualisation diagrams and wireframes. • Apply knowledge of HCI principles to evaluate and inform the design of user interfaces across a range of hardware, software and interaction contexts. • Apply understanding of data types, validation, verification, storage and testing to ensure digital solutions are accurate, reliable and fit for purpose. • Apply understanding of modern and emerging technologies to real-world contexts, considering their impact on users, organisations and systems. Analysis and Evaluation	Knowledge and Understanding • Demonstrate knowledge of key concepts in digital information technology, including cyber security threats, prevention methods, legislation, digital communication, devices, connectivity and audience considerations. • Recall and explain key terms, processes and issues relating to the use of digital systems in real-world contexts. Application of Knowledge and Skills • Apply understanding of cyber security threats and prevention methods to real-world scenarios involving individuals and organisations. • Apply knowledge of legislation to explain responsibilities and implications for users and organisations. • Select and apply appropriate digital communication methods, software, devices and distribution channels to meet specific user needs. • Apply understanding of audience demographics to justify the selection of appropriate digital solutions. Analysis and Evaluation (AO3) • Analyse the impact of cyber security threats and attacks on individuals and organisations. • Evaluate the effectiveness of different prevention methods and security measures in reducing risk.

	• Analyse how hardware, software and user interaction methods influence the design and effectiveness of digital systems. • Evaluate the suitability of design choices, data handling methods and technological solutions in meeting user needs. • Review and refine digital solutions through testing and feedback to improve effectiveness and usability. Assessment Objectives (OCR-aligned) • **AO1:** Demonstrate knowledge and understanding of facts, terms, processes and issues in relation to digital information technology. • **AO2:** Apply knowledge and understanding of facts, terms, processes and issues in relation to digital information technology.	• Assess the suitability of digital communication methods, devices, connectivity options and distribution channels for different contexts. • Make reasoned judgements about the effectiveness of digital systems and their impact on users, organisations and wider society, making clear connections between concepts and contexts. Assessment Objectives (OCR-aligned) • AO1: Demonstrate knowledge and understanding of facts, terms, processes and issues in relation to digital information technology. • AO2: Apply knowledge and understanding of facts, terms, processes and issues in relation to digital information technology.
Cultural Capital	**Pupils will all have been exposed to the concepts of:** • Design tools used in industry to plan and communicate digital solutions (including flowcharts, mind maps, wireframes and visualisation diagrams) • Human Computer Interaction (HCI) and how it shapes the usability and accessibility of everyday systems • The influence of hardware and software platforms on how digital systems are designed and experienced • Different methods of user interaction used across modern technologies (including touch, gesture, voice and traditional input methods) • Data handling processes including data types, validation, verification, storage and testing	**Pupils will all have been exposed to the concepts of:** • Cyber security threats and risks in modern digital systems • Methods used by organisations to protect data and systems • The legal framework governing the use of digital technologies and data • The impact of digital communication methods on individuals, organisations and society • The role of digital devices, connectivity and distribution systems in everyday life • The importance of audience needs and demographics in shaping digital content and communication • Responsible and ethical use of digital technologies in personal, educational and professional contexts ***This will enhance cultural capital because***

	• The role of data in decision-making across real-world contexts such as retail, healthcare, banking and transport • The Internet of Everything (IoE) and how connected devices are transforming homes, workplaces and public services • The benefits, risks and security implications associated with modern and emerging technologies **This will enhance cultural capital because:** Learners will develop a broader understanding of how digital technologies shape modern society and influence the way people live, work and communicate. By exploring real-world applications such as banking systems, healthcare technologies, smart devices and transport systems, learners will gain insight into the importance of digital design, data management and system reliability in everyday life. Understanding Human Computer Interaction and accessibility will help learners appreciate how technology can be designed to be inclusive and meet the needs of a diverse range of users. Exploring data handling, testing and validation will develop awareness of the importance of accuracy, security and trust in digital systems used by organisations. In addition, studying the Internet of Everything will allow learners to understand how interconnected technologies are transforming industries and creating new opportunities and challenges in society. This will prepare learners to engage confidently with modern digital technologies and support informed decision-making in both education and future employment contexts.	Learners will develop a deeper understanding of how digital systems shape modern society and the ways in which individuals and organisations interact with technology on a daily basis. By studying cyber security threats and protection methods, learners will gain awareness of the risks associated with living in an increasingly digital world and the importance of protecting personal and organisational data. Understanding legislation and responsible use of technology will support learners in becoming informed digital citizens who are aware of their rights, responsibilities and the legal boundaries that govern technology use in education, employment and everyday life. Exploring digital communication methods, devices and distribution channels will allow learners to understand how information is created, shared and accessed across different platforms and audiences. This helps them to critically evaluate the effectiveness and appropriateness of digital content in real-world contexts. Overall, this component builds learners' cultural awareness of how technology influences communication, security, privacy and decision-making in a connected global society, preparing them for further study, employment and responsible participation in the digital world.

Assessment: Formative – classwork and homework. Summative – end of cycle assessments and end of year examination.	**Assessment** • **Formative Assessment** Learners will be assessed regularly through classwork, homework, retrieval practice, practical tasks and teacher questioning. These assessments will focus on the development of knowledge and skills across the curriculum, including design tools, Human Computer Interaction (HCI), data handling, cyber security, legislation, digital communication, devices, connectivity and audience awareness. • Formative assessment will be used to identify misconceptions, reinforce key knowledge and support progress over time. **Summative Assessment** • Learners will complete a combination of internal and external summative assessments across the KS4 course, including end-of-topic assessments, end-of-cycle assessments and examination-style questions. • Assessment will focus on learners' ability to: • Demonstrate knowledge and understanding of key concepts (AO1) • Apply knowledge to vocational and real-world contexts (AO2) • Analyse and evaluate digital systems, risks, design decisions and their impact (AO3) OCR Non-Examined Assessment (NEA) Units R060 – Data Manipulation using Spreadsheets Learners will complete an internally assessed and externally moderated unit focused on the use of spreadsheets to input, manipulate, analyse and present data. They will demonstrate the	**Assessment** • **Formative Assessment** Learners will be assessed regularly through classwork, homework, retrieval practice, practical tasks and teacher questioning. These assessments will focus on the development of knowledge and skills across the curriculum, including design tools, Human Computer Interaction (HCI), data handling, cyber security, legislation, digital communication, devices, connectivity and audience awareness. • Formative assessment will be used to identify misconceptions, reinforce key knowledge and support progress over time. • **Summative Assessment** Learners will complete a combination of internal and external summative assessments across the KS4 course, including end-of-topic assessments, end-of-cycle assessments and examination-style questions. • Assessment will focus on learners' ability to: • Demonstrate knowledge and understanding of key concepts (AO1) • Apply knowledge to vocational and real-world contexts (AO2) • Analyse and evaluate digital systems, risks, design decisions and their impact (AO3) OCR Non-Examined Assessment (NEA) Units R070 – Augmented Reality Presentation (Year 11) Learners will complete an internally assessed and externally moderated unit focused on the creation of an augmented reality

	ability to use spreadsheet tools effectively to solve a set task and produce meaningful outputs. Additional Assessment Methods • Class activities and practical tasks • End-of-topic assessments • Mock examination papers • Targeted exam-style questions • Homework tasks designed to reinforce and extend learning	(AR) product. They will design, develop and evaluate an AR solution to meet a given brief, demonstrating creativity, technical understanding and evaluation skills. Additional Assessment Methods • Class activities and practical tasks • End-of-topic assessments • Mock examination papers • Targeted exam-style questions • Homework tasks designed to reinforce and extend learning **External Assessment** The course is assessed through external examination in Year 11. Learners will sit the final examination in the summer series, with opportunities for resit in subsequent exam series where applicable.

YEAR GROUP PLANS			
Year 10			
Cycle 1	**Cycle 2**	**Cycle 3**	**Cycle 4**
Component 1-2 **Learning aim A: Investigate user interface design for individuals and organisations:** ***Pupils will know:*** • **1.1 Design tools –** Learners will understand the purpose and application of a range of design tools used during the planning and development of user interfaces. This includes flowcharts, mind maps, visualisation diagrams and wireframes, and how each supports the design process. • 2.1 Human Computer interface (HCI) - Learners will understand what a Human-Computer Interface (HCI) is and investigate a range of interface types used by individuals and organisations. They will examine the purpose, advantages and limitations of different interfaces and how they vary according to device, user requirements and context.	*Component 3* **Learning Aim B: Investigate data, information and testing methods used within IT systems** ***Pupils will know:*** • 3.1 Information and data – Learners will understand the difference between data and information and how raw data is processed to become meaningful information. They will investigate the relationship between data and information in a range of contexts. • 3.2.1 Use of data types in different contexts – Learners will understand the characteristics and purposes of different data types including alphanumeric, Boolean, date, numeric and text data. They will consider how data types are selected based on user requirements and intended use. • 3.2.2 The difference between validation and verification –	*Component 4* **Learning aim C: Investigate cyber security and legislation** ***Pupils will know:*** • 4.1 Threats Learners will understand the range of cyber-security threats that affect individuals and organisations. They will investigate how threats occur, how attackers exploit systems, the motivations behind attacks, and methods used to reduce risks. • 4.2 Impacts of cyber-security attacks Learners will understand the consequences of cyber-security breaches and how attacks can affect individuals and organisations through data loss, theft, manipulation and disruption of services. • 4.3 Prevention measures Learners will understand how physical and logical security measures can be used to protect systems, networks and data from cyber-security threats. • 4.4 Legislation related to the use of IT systems Learners will understand the	*Unit R060: Data Manipulation Using Spreadsheets* **Learning Aim D: Develop and test spreadsheet solutions to meet user requirements** ***Pupils will know:*** **Spreadsheet Design -** Learners will understand the importance of planning spreadsheet solutions before development. They will investigate how user requirements influence spreadsheet design, structure and functionality. **Spreadsheet Structure -** Learners will understand how spreadsheets are organised using workbooks, worksheets, rows, columns and cell references. They will apply appropriate naming conventions and layouts to improve usability. **Data Entry and Formatting -** Learners will understand how formatting improves the readability and presentation of spreadsheet solutions. They will investigate techniques for formatting cells, text, tables and numerical data.

• **2.2** Hardware considerations - Learners will understand how hardware components influence the performance and effectiveness of a Human-Computer Interface. This includes consideration of display size, display type, processing power, memory requirements and other system resources required to support different interface types. • **2.3** Software considerations - Learners will understand the role of operating systems in supporting Human-Computer Interfaces. They will explore a range of operating systems, including Microsoft Windows, Apple macOS, Linux distributions, Unix, ChromeOS, Apple iOS and Google's Android platform, and consider their impact on interface design and functionality.. • **2.4** User interaction methods - Learners will understand the range of methods available for interacting with digital devices. They will investigate interaction methods including keyboard, mouse, touch, gesture and voice control, evaluating the advantages, limitations and suitability of each for different users and contexts. ***Pupils will be able to:***	Learners will understand the distinct purposes of validation and verification and how they help improve data accuracy and reliability. • 3.2.3 Data validation tools – Learners will investigate a range of validation techniques including presence checks, range checks, lookup tables, format checks, length checks, input masks and limited-choice controls such as drop-down lists, radio buttons and tick lists. • 3.2.4 Data verification tools – Learners will understand how manual checking and double-entry methods are used to ensure data has been entered correctly. • 3.3 Data collection methods – Learners will investigate primary and secondary methods of data collection and evaluate their suitability for different situations. • 3.4 Storage of collected data – Learners will understand the advantages and disadvantages of logical and physical storage locations and investigate a range of storage devices used to store collected data. • 3.5.1 Importance and purpose of testing – Learners will understand	purpose of legislation affecting the use of IT systems and the responsibilities placed upon individuals and organisations. ***Pupils will be able to:*** • Explain common cyber-security threats and attacks. • Evaluate the impact of cyber-security incidents on individuals and organisations. • Recommend suitable physical and logical security measures for different contexts. • Assess the effectiveness of cyber-security prevention measures. • Explain the purpose of key IT legislation. • Apply legislation to real-world scenarios. • Justify security recommendations based on identified threats and risks. • Evaluate the consequences of failing to comply with legislation. • Use appropriate technical terminology when discussing cyber security and legislation. ***Pupils will all have been exposed to [the ideas of/the texts/the concepts/ the composites]:*** ***Denial of Service (DoS)***	**Formulae and Functions -** Learners will understand how formulae and functions are used to process and manipulate data. They will investigate a range of functions commonly used in spreadsheet development. **Data Validation -** Learners will understand how validation tools reduce user error and improve data quality within spreadsheet solutions. **Data Analysis -** Learners will understand how spreadsheets can be used to analyse, manipulate and interpret data through sorting, filtering, calculations and data visualisation. **Charts and Visualisations -** Learners will understand how charts and graphs can be used to present data clearly and effectively for different audiences. **Testing and Evaluation -** Learners will understand the importance of testing spreadsheet solutions and evaluating them against user requirements. ***Pupils will be able to:*** • Interpret a client brief and identify user requirements. • Plan a spreadsheet solution. • Create and organise workbooks and worksheets. • Enter and format data appropriately. • Construct formulae using cell references.

• Identify and select appropriate design tools for different stages of the user interface design process. • Explain the purpose and characteristics of different Human-Computer Interface (HCI) types. • Compare the advantages and disadvantages of different interface types in a range of contexts. • Analyse how hardware requirements influence the design and performance of user interfaces. • Explain how operating systems support Human-Computer Interfaces and affect user experience. • Evaluate different methods of user interaction and determine their suitability for different users and tasks. • Assess the suitability of different design tools and interface types for specific users and contexts. • Apply their understanding of design tools and interface design when planning user interface solutions.	why testing is essential during the development process and investigate the consequences of inadequate testing. • 3.5.2 Test data – Learners will understand the role of valid, invalid and extreme test data during testing activities. • 3.5.3 Types of testing – Learners will investigate user testing and technical testing, including the advantages, limitations and suitability of each testing method. ***Pupils will be able to:*** • Explain the differences between data and information. • Identify and select suitable data types for different purposes. • Justify the use of particular data types within given scenarios. • Compare validation and verification techniques. • Recommend appropriate validation methods to reduce data entry errors.	***Hacking*** ***Black Hat Hackers*** ***Grey Hat Hackers*** ***White Hat Hackers*** ***Malware*** ***Adware*** ***Botnets*** ***Ransomware*** ***Spyware*** ***Trojan Horses*** ***Viruses*** ***Worms*** ***Social Engineering*** ***Phishing*** ***Baiting*** ***Pretexting*** ***Quid Pro Quo*** ***Scareware*** ***Shoulder Surfing*** ***Data Theft*** ***Data Destruction*** ***Data Manipulation*** ***Data Modification*** ***Identity Theft*** ***Firewalls*** ***Biometric Security*** ***RFID*** ***Encryption*** ***Two-Factor Authentication*** ***Usernames and Passwords*** ***Access Rights and Permissions*** ***Secure Backups*** ***Data Erasure*** ***Data Sanitisation*** ***Magnetic Wipe***	• Use spreadsheet functions accurately. • Apply absolute and relative cell referencing. • Create and apply data validation rules. • Sort and filter datasets. • Create appropriate charts and graphs. • Test spreadsheet functionality using valid, invalid and extreme test data. • Identify and correct errors. • Evaluate completed spreadsheet solutions against requirements. • Use appropriate spreadsheet terminology throughout development. ***Pupils will all have been exposed to [the ideas of/the texts/the concepts/ the composites]:*** • ***Spreadsheet software*** • ***Workbook*** • ***Worksheet*** • ***Cell reference*** • ***Relative referencing*** • ***Absolute referencing*** • ***Formulae*** • ***Functions*** • ***SUM*** • ***AVERAGE*** • ***MIN*** • ***MAX*** • ***COUNT***

• Justify design decisions based on user needs, accessibility requirements and intended purpose. ***Pupils will all have been exposed to [the ideas of/the texts/the concepts/ the composites]:*** • ***Design tools and planning techniques*** • ***Flowcharts*** • ***Mind maps*** • ***Visualisation diagrams*** • ***Wireframes*** • ***Human-Computer Interfaces (HCI)*** • ***Desktop and mobile operating systems*** • ***Hardware requirements*** • ***User interaction methods*** • ***Accessibility considerations*** • ***User-centred design principles*** ***Pupils will have been assessed on:*** • *Knowledge and understanding of design tools used within the interface design process.* • *Knowledge and understanding of Human-Computer Interface (HCI) types and their uses.* • *Understanding of hardware and software considerations affecting interface design.*	• Evaluate the suitability of different data collection methods. • Select appropriate storage methods for specific users and organisations. • Explain the importance of testing during system development. • Create and apply suitable test data. • Distinguish between technical and user testing. • Evaluate testing strategies against user requirements. • Use accurate technical terminology when discussing data and testing. ***Pupils will all have been exposed to [the ideas of/the texts/the concepts/ the composites]:*** • ***Data*** • ***Information*** • ***Data processing*** • ***Data types*** • ***Alphanumeric data*** • ***Boolean data*** • ***Numeric data*** • ***Integer*** • ***Decimal*** • ***Currency*** • ***Percentage***	***Physical Destruction*** ***Computer Misuse Act*** ***Data Protection Act*** ***Copyright, Designs and Patents Act*** ***Freedom of Information Act*** ***Health and Safety at Work Act*** ***Pupils will have been assessed on:*** • *Knowledge and understanding of cyber-security threats.* • *Understanding of the impacts of cyber-security attacks.* • *Ability to identify suitable prevention measures.* • *Understanding of legislation affecting IT systems.* • *Ability to apply legislation to realistic scenarios.* • *Ability to recommend suitable security measures for different contexts.* • *Ability to evaluate cyber-security risks and mitigation strategies.* • *Application of technical terminology when discussing cyber security and legislation.* ***by [method of assessment].*** • *End-of-topic assessment.* • *Scenario-based examination questions.*	• ***COUNTIF*** • ***SUMIF*** • ***IF statements*** • ***Data validation*** • ***Lookup tables*** • ***Sorting*** • ***Filtering*** • ***Conditional formatting*** • ***Cell formatting*** • ***Number formatting*** • ***Currency formatting*** • ***Percentage formatt*** • ***Charts*** • ***Graphs*** • ***Testing*** • ***Evaluation*** • ***User requirements*** • ***Design documentation*** ***Pupils will have been assessed on*** • *Understanding of spreadsheet structures and terminology.* • *Creation and use of formulae and functions.* • *Application of validation techniques.* • *Ability to manipulate and analyse data.* • *Selection and creation of appropriate charts.* • *Testing, debugging and refining spreadsheet solutions.*

• *Understanding of different user interaction methods and their suitability for different contexts.* • *The ability to compare, evaluate and justify interface designs against user requirements.* • *The application of appropriate technical terminology when discussing user interface design.* ***by [method of assessment].*** • *Design activities and practical investigations* • *Written assessment tasks* • *Research and evaluation activities* • *Homework and retrieval-based knowledge checks*	• ***Real number*** • ***Date data*** • ***Text data*** • ***Validation*** • ***Verification*** • ***Presence checks*** • ***Range checks*** • ***Format checks*** • ***Length checks*** • ***Input masks*** • ***Lookup tables*** • ***Manual checking*** • ***Double entry*** • ***Primary data collection*** • ***Secondary data collection*** • ***Data storage*** • ***Cloud storage*** • ***Network storage*** • ***Portable storage devices*** • ***Internal storage*** • ***Network drives*** • ***External HDD*** • ***SSD*** • ***USB flash drives*** • ***NAS devices*** • ***Wireless drives*** • ***Testing*** • ***Valid test data*** • ***Invalid test data*** • ***Extreme test data*** • ***Technical testing*** • ***User testing***	• *Case study investigations.* • *Cyber-security poster or awareness campaign.* • *Cyber-security risk assessments* • *Retrieval quizzes.* • *Knowledge checks.* • *Written evaluations.*	• *Evaluation of spreadsheet solutions against user requirements.* • *Application of spreadsheet skills within a realistic scenario.* • ***by [method of assessment]:*** • *Spreadsheet development tasks.* • *Practical classroom activities.* • *Mini-project portfolio.* • *End-of-unit practical assessment.* • *Knowledge checks and retrieval quizzes.* • *Evaluation and reflection activities.*

	Pupils will have been assessed on: • *Knowledge and understanding of data and information.* • *Understanding of the characteristics and uses of different data types.* • *Understanding of validation and verification methods.* • *Ability to select and justify suitable validation techniques.* • *Understanding of data collection methods and their suitability.* • *Knowledge of storage methods and storage devices.* • *Understanding of the purpose and importance of testing.* • *Ability to create, identify and apply valid, invalid and extreme test data.* • *Understanding of technical and user testing methods.* • *Application of technical terminology when discussing data and testing.* ***by [method of assessment].***		

	• *End of topic assessment.* • *Scenario-based exam questions.* • *Practical spreadsheet data validation tasks.* • *Testing documentation activities.* • *Homework and retrieval quizzes.* • *Knowledge checks.*		
Literacy *Key terms:* ***Accessibility** – The extent to which a digital product or interface can be used effectively by all users, including those with disabilities.* ***Alternative Text (Alt Text)** – A written description of an image that can be read by screen readers to support users with visual impairments.* ***Human-Computer Interface (HCI)** – The point at which a user interacts with a digital device or system.* ***User Interface (UI)** – The visual and interactive elements through which a user communicates with a device or application.*	*Literacy* *Key terms:* ***Data** – Raw facts and figures which have not yet been processed.* ***Information** – Data that has been processed to give meaning and context.* ***Data Type** – A classification that determines the type of value that can be stored.* ***Alphanumeric** – Data consisting of letters, numbers and symbols.* ***Boolean** – Data with only two possible values, such as True/False.* ***Validation** – A process used to check whether entered data is sensible and reasonable.*	*Literacy* *Key terms:* ***Cyber Security** – The protection of systems, networks and data from digital attacks.* ***Malware** – Software designed to damage or gain unauthorised access to systems.* ***Phishing** – Fraudulent attempts to obtain sensitive information through deceptive communications.* ***Encryption** – The process of converting information into a secure coded format.* ***Firewall** – A security system designed to monitor and control network traffic.* ***Two-Factor Authentication (2FA)** – An additional security measure requiring two methods of verification.* ***Computer Misuse Act** – Legislation designed to prevent unauthorised access to computer systems.*	*Literacy* ***Key terms:*** ***Spreadsheet** – Software used to organise, analyse and process data.* ***Workbook** – A spreadsheet file containing one or more worksheets.* ***Worksheet** – An individual sheet within a workbook.* ***Cell Reference** – The location of a cell within a spreadsheet.* ***Formula** – An expression used to perform calculations.* ***Function** – A predefined formula that performs a specific calculation.* ***Relative Reference** – A cell reference that changes when copied.* ***Absolute Reference** – A fixed cell reference that remains unchanged when copied.*

Wireframe *– A basic visual representation of a user interface layout used during the design process.* ***Visualisation Diagram*** *– A graphical representation showing the appearance and functionality of a proposed product before development begins.* ***Flowchart*** *– A diagram that uses symbols and arrows to represent the steps within a process or system.* ***Mind Map*** *– A visual planning tool used to organise ideas and relationships between concepts.* ***Navigation*** *– The methods used by a user to move through a digital system or interface.* ***Breadcrumb Trail*** *– A navigation aid showing a user's current location within a website or application structure.* ***Haptic Feedback*** *– Physical feedback, such as vibration, provided to users during interaction with a device.* ***Operating System (OS)*** *– Software that manages computer hardware and provides services for applications and users.* ***Gesture Control*** *– A method of interaction that uses body or hand movements as input.* ***Touch Interface*** *– A method of interaction that allows users to control*	***Verification*** *– A process used to check whether data has been entered accurately.* ***Presence Check*** *– Ensures a field is not left blank.* ***Range Check*** *– Ensures data falls within acceptable limits.* ***Format Check*** *– Ensures data follows a specified pattern.* ***Length Check*** *– Checks the number of characters entered.* ***Input Mask*** *– A template controlling how data is entered.* ***Lookup Table*** *– A predefined list of acceptable values.* ***Double Entry*** *– Data is entered twice and compared for accuracy.* ***Manual Checking*** *– A person compares data against the original source.* ***Primary Data*** *– Data collected first-hand for a specific purpose.* ***Secondary Data*** *– Existing data collected by another person or organisation.* ***Cloud Storage*** *– Storing data on remote servers accessed through the internet.* ***Testing*** *– The process of checking a system operates correctly.* ***Valid Data*** *– Data that should be accepted.* ***Invalid Data*** *– Data that should be rejected.*	***Social Engineering*** *– The use of psychological manipulation to persuade individuals to reveal confidential information.* ***Denial of Service (DoS)*** *– An attack designed to prevent legitimate users accessing a service.* ***Ransomware*** *– Malware that encrypts data and demands payment to restore access.* ***Data Theft*** *– The unauthorised copying, transfer or use of data.* ***Identity Theft*** *– The use of another person's personal information for fraudulent purposes.* ***Data Protection Act*** *– Legislation that governs the collection, storage and use of personal data.* ***Reading opportunities:*** **Core Textbooks** Caldwell, R. and Jarvis, A. OCR Cambridge National Information Technologies Student Book (J836) Primary course textbook aligned to the OCR specification. Heathcote, P.M. OCR Cambridge National IT Revision Guide Useful for revision, retrieval practice and examination preparation. Hadnagy, C. Social Engineering: The Science of Human Hacking	***Data Validation*** *– A tool used to restrict the type of data entered into a cell.* ***Conditional Formatting*** *– Formatting that changes automatically when specified conditions are met.* ***Sort*** *– Arranging data into a specific order.* ***Filter*** *– Displaying only selected data based on specified criteria.* ***Chart*** *– A graphical representation of data.* ***Testing*** *– The process of checking that a solution works correctly.* ***Evaluation*** *– Assessing how well a solution meets requirements.* ***Reading opportunities:*** **Core Textbooks** Caldwell, R. and Jarvis, A. OCR Cambridge National Information Technologies Student Book (J836) Primary textbook supporting spreadsheet development skills. Heathcote, P.M. OCR Cambridge National IT Revision Guide Useful for spreadsheet terminology, testing and evaluation. Walkenbach, J. Excel Bible Industry-standard resource explaining spreadsheet functionality and best practices. **Websites** Microsoft Support

devices through direct contact with a screen. ***Voice Control*** *– A method of interaction that enables users to operate systems using spoken commands.* ***User Experience*** *(UX) – The overall experience and satisfaction of a user when interacting with a product or system.* ***Reading opportunities:*** **Core Textbooks** Caldwell, R. and Jarvis, A. OCR Cambridge National Information Technologies Student Book (J836) Primary course textbook aligned to the OCR specification. Heathcote, P.M. OCR Cambridge National IT Revision Guide Useful for retrieval practice, exam preparation and knowledge consolidation. Williams, R. The Non-Designer's Design Book Supports understanding of effective communication design and audience needs. **Websites**	***Extreme Data*** *– Data at the upper or lower boundary of acceptable values.* ***Technical Testing*** *– Testing carried out by developers or technical specialists.* ***User Testing*** *– Testing carried out by end users.* ***Reading opportunities****:* **Core Textbooks** Caldwell, R. and Jarvis, A. OCR Cambridge National Information Technologies Student Book (J836) Heathcote, P. OCR Cambridge National Information Technologies Revision Guide **Websites** BBC Bitesize ICT & Computing https://www.bbc.co.uk/bitesize Supports understanding of data, validation and testing concepts. Computer Hope https://www.computerhope.com Useful reference for data storage, validation and verification methods. Teach-ICT https://www.teach-ict.com Revision materials and examples relating to data handling and testing. OCR Cambridge National Resources	Accessible examples of social engineering techniques and cyber-security threats. Provides real-world examples of social engineering techniques, cyber-security risks and threat mitigation. **Websites** https://www.ncsc.gov.uk Government guidance on cyber-security threats, prevention measures and online safety. Useful for: Malware Phishing Social engineering Security best practice Cyber Aware https://www.cyberaware.gov.uk Government cyber-security awareness resources. Useful for: Password security Two-factor authentication Cyber-security prevention measures BBC Bitesize ICT & Computing https://www.bbc.co.uk/bitesize Student-friendly explanations of:	https://support.microsoft.com/excel Official guidance on formulas, functions, charts and spreadsheet features. ExcelJet https://exceljet.net Clear explanations and worked examples of spreadsheet functions. GCF Global https://edu.gcfglobal.org/en/excel/ Free tutorials covering spreadsheet skills and Excel techniques. OCR https://www.ocr.org.uk Official specification guidance and support materials. BBC Bitesize https://www.bbc.co.uk/bitesize Revision materials relating to spreadsheets, data analysis and testing.

BBC Bitesize https://www.bbc.co.uk/bitesize Student-friendly explanations of communication technologies and digital systems. Ofcom https://www.ofcom.org.uk Reports and statistics relating to communication technologies, digital audiences and device usage. Canva Design School https://www.canva.com/designschool Resources exploring effective communication design and visual communication principles. Microsoft Support https://support.microsoft.com Guidance on Office applications used to create digital communications. OCR https://www.ocr.org.uk Specification guidance, exemplar materials and assessment support.	https://www.ocr.org.uk Specification guidance and exemplar materials.	Cyber security Data protection Communication technologies Emerging technologies OCR Cambridge Nationals Resources https://www.ocr.org.uk Specification guidance, exemplar materials and support resources. Useful for: Examination preparation Knowledge checks Retrieval activities Common Sense Media https://www.commonsensemedia.org Digital literacy and online safety resources. Useful for: Social media Online communication Cyber-security awareness	
Connections ***We have identified these connections to other subject areas:*** **Media Studies – Design principles, visual communication and audience needs.**	***Connections*** ***We have identified these connections to other subject areas:*** ***Mathematics – Data types, percentages, statistics and logical reasoning.***	***Connections*** ***We have identified these connections to other subject areas:*** ***Business Studies – Data security, legislation and communication methods.***	***Connections*** ***We have identified these connections to other subject areas:*** ***Mathematics – Formulae, percentages, calculations and data analysis.***

Design Technology – Design processes, prototyping and user-centred design. **English – Technical vocabulary, evaluation and justification of design decisions.**	***Science – Collection and analysis of experimental data.*** ***Business Studies – Customer databases and data-driven decision making.*** ***English – Evaluation, explanation and written justification.***	***English – Evaluation, justification and written responses.*** ***Media Studies – Online safety, media influence and awareness campaigns.*** ***Citizenship – Online safety, digital responsibility and legislation.*** ***Science – Emerging technologies and connected devices.***	***Business Studies – Financial modelling, budgeting and decision making.*** ***Science – Recording, processing and analysing experimental data.*** ***Geography – Data collection, presentation and interpretation.*** ***English – Evaluation, justification and technical report writing.***
Learning at home ***Consolidation of learning will take place at home by…*** • ***Researching examples of Human-Computer Interfaces used in everyday life.*** • ***Creating flowcharts, mind maps, visualisation diagrams and wireframes to support design activities.*** • ***Reviewing lesson content and key terminology using retrieval practice activities.*** • ***Completing homework and independent study tasks linked to classroom learning.*** • ***Evaluating the effectiveness of existing user interfaces and identifying strengths and weaknesses.*** • ***Completing assessment preparation activities and practice examination questions where appropriate.***	***Learning at home*** ***Consolidation of learning will take place at home by…*** • ***Investigating examples of data collection methods used by organisations.*** • ***Identifying validation and verification methods used on websites and online forms.*** • ***Practising exam-style questions.*** • ***Completing retrieval quizzes using key terminology.*** • ***Researching storage devices and cloud storage solutions.*** • ***Creating test plans and test data scenarios.*** • ***Reviewing lesson notes and knowledge organisers.***	***Learning at home*** ***Consolidation of learning will take place at home by…*** • ***Researching current cyber-security incidents reported in the media.*** • ***Investigating examples of malware and social engineering attacks.*** • ***Reviewing legislation and creating summary revision materials.*** • ***Completing retrieval quizzes and knowledge organisers.*** • ***Practising examination-style questions.*** • ***Evaluating security measures used by organisations.*** • ***Following cyber-security awareness campaigns from the National Cyber Security Centre.*** • ***Reviewing lesson notes and key terminology.***	***Learning at home*** ***Consolidation of learning will take place at home by…*** • ***Practising spreadsheet skills using Microsoft Excel or Google Sheets.*** • ***Completing formula and function exercises.*** • ***Investigating real-world uses of spreadsheets in business and industry.*** • ***Reviewing lesson content through retrieval activities.*** • ***Creating charts and analysing data sets.*** • ***Exploring advanced spreadsheet features such as data validation, conditional formatting and fun.*** • ***Testing spreadsheet solutions using different test data.*** • ***Evaluating completed solutions against user requirements.*** • ***Completing preparation activities for internally assessed assignments.***

	• ***Completing homework activities linked to classroom learning.***		

Sequencing

The Year 10 curriculum has been sequenced to build learners' understanding of core IT concepts before applying these skills in a practical context through Unit R060: Data Manipulation Using Spreadsheets.

Learners begin by studying design tools and Human Computer Interfaces, providing a foundation for understanding how digital solutions are planned and developed. They then progress to data and testing, developing knowledge of data types, validation, verification and testing methodologies. This is followed by cyber security and legislation, enabling learners to understand the risks, responsibilities and legal considerations associated with the use of IT systems.

The knowledge and skills developed throughout Cycles 1 to 3 support learners when undertaking Unit R060, where they apply their understanding of data validation, testing and user requirements within a practical spreadsheet project.

The curriculum builds upon knowledge and skills developed at Key Stage 3 and provides a strong foundation for Year 11, where learners will study Digital Communications, the Internet of Everything (IoE), undertake examination preparation for Unit R050: IT in the Digital World, and complete Unit R070.

YEAR GROUP PLANS	
Year 11	
Cycle 1	**Cycle 2**
Component 5 **Learning Aim E: Investigate digital communications and their use in meeting user requirements** ***Pupils will know:*** • **5.1** Types of digital communication Learners will understand the purpose, characteristics, advantages and disadvantages of a range of digital communication methods. They will investigate how different communication methods are used by individuals and organisations to communicate information and meet user needs. Learners will assess the suitability of communication methods in different contexts and justify their selection. • **5.2** Software used to create digital communications Learners will understand the characteristics of software applications used to create digital communications. They will investigate desktop publishing (DTP) software and standard office applications, considering their suitability for different audiences, purposes and user requirements. • **5.3** Digital devices Learners will understand the characteristics, capabilities and limitations of a range of digital devices. They will investigate how smartphones, tablets, PCs, laptops, smart TVs and smartboards are used to create, access and distribute digital communications. • **5.4.1** Distribution channels Learners will understand how digital communications are distributed to intended audiences. They will investigate cloud services, email, messaging platforms, mobile applications, multimedia platforms, websites and Voice over Internet Protocol (VoIP), considering the advantages, disadvantages and suitability of each distribution channel. • **5.4.2** Distribution channel connectivity Learners will understand the characteristics of connectivity methods used to support digital communication and distribution. They will investigate wired and wireless technologies including 4G/5G, Bluetooth, Wi-Fi and mobile hotspots, considering their suitability for different users and situations. • **5.5** Audience demographics Learners will understand how digital communications are designed to meet the needs of different audiences. They will investigate the impact of accessibility requirements, age, gender and location on the design, selection and distribution of digital communications.	*Component 6* **Learning Aim F: Investigate the Internet of Everything (IoE) and its app** ***Pupils will know:*** • 6.1 Use of Internet of Everything (IoE) - Learners will understan Everything (IoE) and how connected devices, people, data and pr intelligent systems. They will investigate the relationship betwee Web and IoE technologies. Learners will explore the four pillars how these elements work together to provide digital interactivity • 6.2 Application areas in everyday life - Learners will understand technologies are used within a range of everyday applications. Th connected technologies are used within health services, energy m transport, emergency services, business environments, home env Learners will evaluate the advantages, disadvantages, security im Internet of Everything technologies in different contexts. ***Pupils will be able to:*** • Define the Internet of Everything (IoE). • Explain the relationship between the Internet, World Wide Web • Identify and explain the four pillars of the Internet of Everything • Explain how people, processes, data and devices interact within • Compare the advantages and disadvantages of IoE technologies • Assess the suitability of IoE solutions within different applicatior • Evaluate the impact of IoE technologies on individuals and orgar • Analyse how digital interactivity improves user experiences. • Explain how devices can be tailored to meet user needs. • Identify security risks associated with connected technologies.

Pupils will be able to:

- *Identify and explain different forms of digital communication.*
- *Compare the advantages and disadvantages of communication methods.*
- *Assess the suitability of digital communications for different audiences and situations.*
- *Select appropriate communication methods based on user requirements.*
- *Justify the selection of communication methods for specific contexts.*
- *Explain the characteristics of software used to create digital communications.*
- *Select suitable software applications for communication tasks.*
- *Explain the characteristics and uses of different digital devices.*
- *Assess the suitability of digital devices for creating and accessing digital communications.*
- *Compare different distribution channels and connectivity methods.*
- *Evaluate the effectiveness of communication methods and channels.*
- *Analyse audience demographics and their impact on communication design.*
- *Recommend suitable communication solutions for a given scenario.*
- *Use appropriate technical terminology when discussing digital communications.*

Pupils will all have been exposed to [the ideas of/the texts/the concepts/ the composites]:

Audio communications
Collaboration tools
Leaflets
Infographics
Newsletters
Presentations
Reports
Social media
Video communications
Voice over Internet Protocol (VoIP)
Websites
Desktop Publishing (DTP)
Office applications
Smartphones
Tablets

- Recommend suitable security measures for IoE environments.
- Justify the use of IoE technologies in different real-world scenar
- Use appropriate technical terminology when discussing Internet

Pupils will all have been exposed to [the ideas of/the texts/the concepts/

- *Internet of Everything (IoE)*
- *Internet*
- *World Wide Web (WWW)*
- *Digital interactivity*
- *Smart devices*
- *Connected technologies*
- *Device-to-device communication*
- *Human-to-device communication*
- *Data transmission*
- *Sensors*
- *Automation*
- *Real-time data*
- *Personal smart devices*
- *Smart homes*
- *Smart businesses*
- *Smart cities*
- *Energy management systems*
- *Wearable technology*
- *Healthcare technologies*
- *Manufacturing technologies*
- *Transport technologies*
- *Emergency services technologies*
- *Security risks*
- *Device customisation*
- *User requirements*
- *Internet connectivity*
- *Data collection*
- *Cloud services*

PCs and laptops Smart TVs Smartboards Cloud distribution Email Messaging platforms Mobile applications Multimedia distribution Websites 4G and 5G Bluetooth Mobile hotspots Wi-Fi Wired connections Accessibility Audience demographics Target audience Age demographics Gender demographics Geographic location User requirements ***Pupils will have been assessed on:*** • *Knowledge and understanding of digital communication methods.* • *Understanding of the advantages and disadvantages of different communication methods.* • *Ability to select and justify appropriate communication methods.* • *Understanding of software used to create digital communications.* • *Knowledge of digital devices and their applications.* • *Ability to evaluate distribution channels and connectivity methods.* • *Understanding of audience demographics and accessibility considerations.* • *Ability to assess the suitability of communication methods for specific user groups.* • *Application of technical terminology when discussing digital communications.* ***by [method of assessment].***	• *Artificial Intelligence (AI)* • *Internet-enabled devices* ***Pupils will have been assessed on:*** • *Knowledge and understanding of the Internet of Everything.* • *Understanding of the relationship between people, processes, da* • *Understanding of digital interactivity and connected technologie* • *Ability to explain the role of Internet and World Wide Web techn* • *Understanding of IoE applications in everyday life.* • *Ability to evaluate advantages and disadvantages of IoE solution* • *Understanding of security risks associated with connected systen* • *Ability to assess the suitability of IoE technologies for different c* • *Application of technical terminology when discussing emerging t* ***by [method of assessment].*** • *End-of-topic assessment.* • *Scenario-based examination questions.* • *Case study investigations.* • *Research presentations.* • *Technology evaluation activities.* • *Retrieval quizzes.* • *Knowledge checks.* • *Written evaluations and extended responses.*

• End-of-topic assessment. • Scenario-based examination questions. • Communication planning activities. • Research and investigation tasks. • Group discussion and evaluation activities. • Retrieval quizzes. • Knowledge checks. • Written evaluations and extended responses.	

Literacy ***Key terms:*** **Digital Communication** – The exchange of information using digital technologies and electronic devices. **Audience Demographic** – Characteristics of a target audience, such as age, gender, location and accessibility needs. **Accessibility** – Designing communications so they can be accessed and understood by all users, including those with disabilities. **Collaboration Tool** – Software that allows users to communicate, share information and work together remotely. **Desktop Publishing (DTP)** – Software used to create professional publications such as newsletters, leaflets and brochures. **Distribution Channel** – The method used to deliver digital communications to an intended audience. **Cloud Computing** – The delivery of computing services and data storage over the internet. **Voice over Internet Protocol (VoIP)** – Technology that enables voice communication using internet connections rather than traditional telephone networks. **Multimedia** – The combination of text, images, audio, video and animation within a communication.	***Literacy*** ***Key terms:*** **Internet of Everything (IoE)** – A network connecting people, processes, internet. **Internet** – A global network of interconnected computer systems. **World Wide Web (WWW)** – A collection of web pages and resources ac **Digital Interactivity** – The exchange of information between users, devi **Smart Device** – A device connected to the internet that can collect, proc **Sensor** – A device that detects and responds to changes within its enviro **Automation** – The use of technology to perform tasks with minimal hum **Real-Time Data** – Data that is processed and made available immediatel **Cloud Computing** – The delivery of computing services and storage thro **Internet-Enabled Device** – A device capable of connecting to networks a **Device-to-Device Communication** – The automatic exchange of data be **Human-to-Device Communication** – Interaction between users and digi **Artificial Intelligence (AI)** – Computer systems designed to simulate hun making.

Infographic – A visual representation of information designed to communicate data clearly and efficiently.
Newsletter – A regularly distributed publication containing information for a specific audience.
Social Media – Digital platforms that allow users to create, share and interact with content and communities.
Connectivity – The ability of devices and systems to connect and communicate with each other.
Wi-Fi – Wireless networking technology that allows devices to connect to the internet.
Bluetooth – A short-range wireless communication technology used between devices.
Mobile Hotspot – A device or smartphone feature that shares an internet connection with other devices.
4G/5G – Mobile network technologies that provide wireless internet access and communication services.
Target Audience – The intended group of people for whom a communication has been designed.
User Requirements – The needs and expectations of the intended users of a product or communication.

Core Textbooks

Caldwell, R. and Jarvis, A.
OCR Cambridge National Information Technologies Student Book (J836)
Primary course textbook aligned to the OCR specification.
Heathcote, P.M.
OCR Cambridge National IT Revision Guide
Useful for retrieval practice, exam preparation and knowledge consolidation.
Williams, R.
The Non-Designer's Design Book
Supports understanding of effective communication design and audience needs.

Websites

BBC Bitesize
https://www.bbc.co.uk/bitesize
Student-friendly explanations of communication technologies and digital systems.
Ofcom
https://www.ofcom.org.uk

Smart Home – A home environment that uses connected technologies t
systems.
Cyber Security – The protection of systems, devices and data from digita

Reading opportunities:

Core Textbooks

Caldwell, R. and Jarvis, A.
OCR Cambridge National Information Technologies Student Book (J836
Primary course textbook aligned to the OCR specification.
Heathcote, P.M.
OCR Cambridge National IT Revision Guide
Useful for retrieval practice and revision activities.
Halfacree, G.
The Official Raspberry Pi Handbook
Provides real-world examples of connected devices, sensors and IoE te

Websites

BBC Bitesize
https://www.bbc.co.uk/bitesize
Student-friendly explanations of emerging technologies and connected s
Internet Society
https://www.internetsociety.org
Information about internet technologies, connected devices and modern
Ofcom
https://www.ofcom.org.uk
Reports and statistics relating to internet usage and connected technolo
Statista
https://www.statista.com
Current statistics relating to smart devices, internet usage and emerging
OCR
https://www.ocr.org.uk
Specification guidance and assessment support.
IBM Think
https://www.ibm.com/think
Articles and case studies relating to IoT, AI and connected technologies

Reports and statistics relating to communication technologies, digital audiences and device usage. Canva Design School https://www.canva.com/designschool Resources exploring effective communication design and visual communication principles. Microsoft Support https://support.microsoft.com Guidance on Office applications used to create digital communications. OCR https://www.ocr.org.uk Specification guidance, exemplar materials and assessment support.	

Connections ***We have identified these connections to other subject areas:*** English – Audience, purpose, communication methods and persuasive writing. Media Studies – Communication design, audience demographics and media platforms. Business Studies – Internal and external business communications.	***Connections*** ***We have identified these connections to other subject areas:*** Science – Sensors, automation, data collection and emerging technologie Business Studies – Smart technologies, automation and operational effici Geography – Smart cities, transport systems and environmental monitori

Art and Design – Layout, colour theory and visual communication. Citizenship – Responsible communication and digital literacy.	Design Technology – Product development and embedded systems. Citizenship – Digital responsibility, privacy and technology ethics.
Learning at home ***Consolidation of learning will take place at home by…*** • *Researching how organisations use digital communications to reach different audiences.* • *Evaluating examples of websites, newsletters, social media campaigns and presentations.* • *Comparing different communication methods and identifying their strengths and weaknesses.* • *Investigating how accessibility features improve communication for different users.* • *Completing retrieval quizzes and knowledge organisers.* • *Practising examination-style questions.* • *Reviewing key terminology and specification content.* • *Analysing the communication methods used by local and national organisations.* • *Researching current trends in digital communication technologies.*	***Learning at home*** ***Consolidation of learning will take place at home by…*** • *Researching examples of Internet of Everything technologies use* • *Investigating smart devices used within homes, businesses and p* • *Evaluating the advantages and disadvantages of connected techn* • *Researching cyber-security risks associated with Internet-connec* • *Completing retrieval quizzes and knowledge organisers.* • *Reviewing examination-style scenarios.* • *Following developments in emerging technologies and smart sys* • *Creating case studies based on real-world IoE applications.* • *Reviewing lesson notes and key terminology.*

Sequencing

The Year 11 curriculum has been sequenced to complete coverage of the examined content within Unit R050: IT in the Digital World before allowing learners to apply their knowled
Learners begin the year by studying Digital Communications and the Internet of Everything (IoE), completing the remaining content required for R070. These topics develop learners
Following this, learners undertake Unit R070, where they apply the design, planning, testing and evaluation skills developed throughout the Years 10 and 11. This provides opportuni
within a practical project.

The final cycle is dedicated to revision, intervention, mock examinations and examination preparation for Unit R050. This allows learners to consolidate learning from across all topi
conditions.

This sequencing builds upon the foundations established in Year 10 and provides learners with a string basis for further study in Information Technology, Computing and related leve