Long Term Plan: ICT 2022-23

Year 10 - ICT	Intent	By the end of the year 10 pupils will have the opportunity to develop sector-specific knowledge and skills in a practical learning environment. The focus is on four areas of equal importance, which cover the: development of key skills that prove your aptitude in digital information technology, such as project planning, designing and creating user interfaces, creating dashboards to present and interpret data process that underpins effective ways of working in digital information technology, such as project planning, the iterative design process, cyber security, virtual teams, legal and ethical codes of conduct attitudes that are considered most important in digital information technology, including personal management and communication knowledge that underpins effective use of skills, process and attitudes in the sector such as how different user interfaces meet user needs, how organisations collect and use data to make decisions, virtual workplaces, cyber security and legal and ethical issues The course complements the learning in GCSE programmes such as GCSE in Computer Science by broadening experience and skills participation in different type of performance activities with the opportunity to practically apply your knowledge and skills, through project work such as developing ideas and performing for specific audience
	Assessment strategy	Summative and Formative assessment will take place. Practical and written assessments take place. Some assessments are multiple-choice, shorts answers, flow diagrams, questioning, self- assessment, success criteria

		Topic 1a	Topic 2a	Topic 1b	Topic 2b	Topic 1c	Topic 2c
Year 10 - ICT	Disciplinary knowledge To gain knowledge or skills being built	**Learning aim A: Investigate user interface design for individuals and organisations (NC:4.1, 4.3)** Learners will know how to select and investigate two different types of user interface. They will know how to assess: effectively the user interface meets the audience's requirements, including their accessibility needs, skills level and demographics effectively different design principles have been used	**Topic Focus: Create a dashboard using data manipulation tools (NC:4.1, 4.3) (NC 4.2)** What is data and information: (creative data) How to present information through the use of text, numbers, tables, graphs/charts and infographics How do we check data for reliability and suitable for processing: validation: range, type, look up, presence and length checks and verification: proofreading and	**Learning aim B: Use project planning techniques to plan and design a user interface (NC:4.1, 4.3)** Learners will investigate different project planning techniques. Teachers will provide learners with a brief for the design requirements of a user interface. Learners will: select appropriate project planning tools and methodologies to create a project plan,	**Topic Focus: B the role and impact of using data on individuals and organisations (NC:4.1, 4.3)** **Y7 – ICT: Spreadsheet modelling** How to create a dashboard using data manipulation skills (importing, text to columns formulae (basic IF, SUM, MAX, MIN, COUNT, Lookup) and decision making, (KS3) How to use processing methods (filtering, cell referencing, macros, linking worksheets	**Topic Focus: -** **Developing and Reviewing User Interface (NC 4.3)** Learners will follow their plan and create a user interface. Learners will then: obtain feedback from potential users and refine the user interface until it is complete evaluate the strengths and weaknesses of their user interface	**Topic Focus: C - Draw conclusions and review data presentation method** Learners will use their dashboard to draw conclusions and make appropriate recommendations. They will assess how the presentation features used in their dashboard affect how well the information is understood Drawing conclusion based on data Investigation of how presentations can affect

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		to allow both appropriate and effective user interactions with hardware devices techniques have been used to allow different types of users to efficiently interact with the interface.	double entry? (English and Programming syntax) Who collects data and why do they collect data? data collection methods, data collection features and big data (creative data) Why quality data is important with an investigation to the source, accuracy, age, completeness, amount of detail, format/presentation and volume (creative data) Who uses data modelling: types of sectors and data modelling in decision making. What are the threats to data collection? privacy, fraud, targeting vulnerable groups and inaccurate data.	including outlining the timescales, possible constraints and risks in their project produce an initial design for a user interface that meets user, input, output and accessibility needs. Their initial design should show the designs for at least four different screens in their user interface. They are required to design, create and refine a different user interface for a different set of user requirements	How to present data through the use of: Graphs, pivot tables, formatting and selecting data. Mock assessment Feedback Actual Assignment. Learners will select and apply the data manipulation methods listed in B1 to manipulate data in order: 1) to provide appropriate summaries of the data 2) produce a dashboard to display the summaries of data using appropriate presentation features and presentation methods.	evaluate the strengths and weaknesses of their project plan.	understanding of data. (biased and misinterpreted) Mock assessment Feedback
	Substantive knowledge building blocks	Learning outcome A: Understand interface design for individuals and organisations A1 User interfaces Learners will understand the use of different types of user interface and how they vary across different uses, devices and purposes. ● Types of user interface: o text based o speech/natural language o graphical user interface (GUI)/windows, icons, menus, pointer (WIMP)	Learning outcome A: Understand how data is collected by organisations and its impact on individuals A1 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. ● Characteristics of data: o no meaning o no structure o no context	Learning outcome B: Be able to use project planning techniques to plan, design and develop a user interface B1 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. ● Planning tools: o task lists	Learning outcome B: Be able to create a dashboard using data manipulation tools B1 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. These include: ● data manipulation methods: o importing data, to include from other files, the internet o formulae, to include add, divide, subtract, multiply	Learning outcome C: Be able to review a user interface C1 Review: Learners will understand how to review the success of the user interface and the use of their chosen project planning techniques. ● Strengths and weaknesses of the user interface, to include: o how well the user requirements have been met	Learning outcome C: Be able to draw conclusions and review data presentation methods C1 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. ● Findings, to include: o trends o patterns o possible errors.

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		o sensors o menu/forms. ● Range of uses and devices, to include: o computers o handheld devices to include smartphones, tablets, laptops, e-readers o entertainment systems to include games console, home theatre system o domestic appliances to include air conditioners, dishwashers, tumble dryers, freezers, washing machines, microwave ovens o controlling devices to include security lights, central heating controllers o embedded systems to include electronic parking meters, traffic lights, vending machines, smartwatches/digital wristwatches, robotic vacuum cleaners. ● Factors affecting the choice of user interface: o performance/response time o ease of use o user requirements o user experience o accessibility o storage space.	o unprocessed. ● Characteristics of information: o has meaning o has structure o has context o is processed. A2 Representing information Learners will understand the different ways of representing information and will be able to explain situations where they would be used. ● Text ● Numbers ● Tables ● Graphs/charts ● Sparklines ● Infographics. A3 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. ● Validation methods: o range check o type check o presence check o length check. ● Verification methods: o proofreading o double entry	o written or graphical descriptions o Gantt charts o mood boards o mindmaps. ● Methodologies: o waterfall o agile o scrum B2 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. Project proposal: ● Purpose and audience. ● Project requirements: o user requirements o output requirements, to include visual, audio, haptic o input requirements, to include mouse, keyboard, voice, touch. ● User accessibility requirements. ● Constraints: o time o resources o task dependencies o security.	o functions, to include SUM, AVERAGE, MIN, MAXo sorting, to include sorting multiple columns and values. ● advanced manipulation methods: o decision-making functions, to include IF, WHATIF, SUMIF o lookup functions, to include VLOOKUP, HLOOKUP o count functions, to include COUNTBLANK, COUNTIF, COUNTA o logical operators, to include NOT, AND, OR o outline, to include group, ungroup o subtotal to include AVERAGE, SUM, MIN, MAX, COUNT, COUNTA o filtering, to include greater than, less than, equals, contains, begins with, ends with, text to columns, to include delimited, fixed width. ● other processing methods: o absolute and relative cell referencing, to include use of dollar sign ($) and named cells o macros, to include for automatic navigation, change graph options, change data ranges o multiple and linking worksheets, to include for	o suitability for purpose and audience o ease of use o accessibility features o how effectively the design principles have been met. ● Suggest improvements that could be made to the user interface to better meet the audience needs.	C2 How presentation affects understanding Learners will investigate how well the presentation methods and features listed in B2 have been used, to ensure they do not lead to: ● information being misinterpreted ● information being biased ● inaccurate conclusions being made

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		● Hardware and software influences: o operating systems/platforms o types/size of screen, to include touchscreen, traditional displays o types of user input, to include keyboard, mouse, voice, gestures o hardware resources available, to include processing power, memory o emerging technologies, to include new innovations of input techniques. A2 Audience needs Learners will understand the varying needs of the audience and how they affect both the type and the design of the interface. ● Accessibility needs: o visual o hearing o speech o motor o cognitive Skill level: o expert o regular o occasional o novice.	A4 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. ● Data collection methods: o Primary data – interviews – questionnaires – surveys o Secondary data – websites – books – journals – blogs – forums – booking systems – company internal documents. ● Data collection features: o size of sample o who was in the sample o where the data was collected o when the data was collected o methods used. A5 Quality of information	Project plan: ● Timescales: o overall timescale o when tasks will be completed, including sub-tasks o key milestones. B3 Creating an initial design Learners will understand how to produce an initial design using design principles. ● Producing a design that meets: o the user requirements, including input and output requirements o user accessibility needs. ● Producing a design specification that includes: o visualisation, to include storyboards, sketches o hardware requirements o software requirements. ● Producing a design that allows for: o increased user confidence/familiarity o reduced learning time of new interfaces/features o reduced time to complete tasks o increased user attention o reduced need for specialised knowledge.	dashboard and raw data to cell comments o alternative views, to include hiding/unhiding cells, freezing planes o conditional formatting, to include data bars, colour scales, icon set B2 Producing a dashboard Learners will use a dashboard to select and display information summaries based on a given data set. ● Showing data summaries from the data set: o totals o counts o averages o percentages o sales breakdowns o departmental/section breakdown. ● Appropriate presentation methods: tables; pivot tables; sparklines; graphs/charts, including dynamic charts/graphs; form controls, to include button, combo box, check box, spin button (spinner), dropdown menu, option button; Using appropriate presentation features: font size, style and colour		

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		● Demographics: age; beliefs/values; culture; past experiences. A3 Design principles Learners will understand how design principles provide both appropriate and effective user interaction with hardware devices. ● Colours: use of a limited range of colours; use of organisational house style; ensuring that colours do not clash; use of textures, to include glossy, corporate textures in colours, warm, fabric-style textures. ● Font style/size: ensuring text style/style is readable; use of sans serif fonts for screen reading; avoiding decorative fonts. ● Language: using appropriate language for user needs, to include age-appropriate language; using language that is appropriate for user skill level. ● Amount of information: providing appropriate amount of information for the task; making appropriate use of white space. ● Layout:	Learners will understand the factors that affect the quality of information. ● Quality of information factors: source/collection; method; accuracy; age; completeness; amount of detail; format/presentation; volume. A6 Sectors that use data modelling Learners will understand how different types of data are used by organisations for data modelling. ● Types of sectors, to include: transport; education; retail; banking; entertainment government; health care; construction; communication; health and safety; sport and fitness. A7 Threats to individuals Learners will understand the different threats that face individuals who have data stored about them. ● Threats to individuals, to include: invasion of privacy; fraud; targeting vulnerable groups of people; inaccurate data could be stored.	B4 Developing a user interface Learners will understand how to use their design to produce a user interface. ● Initial design using the design principles listed in A3 Design principles.	merge cells; text wrap; cell borders and shading; graphics; axis labels; titles, including overall and section titles; conditional formatting		

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		consistency throughout the whole interface; keeping the layout as close as possible to user expectations; placing important items in prominent positions; grouping related tasks together; use of navigational components to include search fields, breadcrumbs, icons; use of input controls, to include dropdown lists, tick boxes, toggles. ● User perception of: colour, to include green to indicate go/successful interactions, orange to indicate; warnings, red to indicate stop/errors; sound, to include positive high-pitched sounds, negative low-pitched sounds; symbols, to include green ticks, red crosses; visuals, to include photographs, symbols, graphics. Retaining user attention: grabbing attention, to include pop-up messages, flashing graphics, sound, animation; ensuring the screen is uncluttered; clearly labelled items/ features; use of predetermined/default values for common user inputs; use of autofill to					

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		reduce the amount of data entry needed, to include postcodes; use of tip text to provide help if the user is unsure what buttons/tools do. ● Intuitive design: use graphics to denote what buttons do; helpful pop-up messages; easy-to-use help features; ensuring consistency; easy reversal of actions. A4 Designing an efficient user interface Learners will understand the techniques that can be used to improve both the speed and access to user interfaces. ● Use of keyboard shortcuts ● Informative feedback ● Easy reversal of actions ● Ensuring buttons/links are distinguishable ● Using bigger objects to influence selection and reduce selection time ● Making objects stand out to reduce focus time ● Placing related objects next to each other to reduce selection time					
	Justification	Students need to develop an understanding about the way web and screen need to display and present	Collecting data is a fundamental part of everyday life. Students need to understand the processes of	Planning projects ranges through every career and job. Students will be able to apply skills learnt to	Once data has been collected. Students need to understand how to store it. They need to be able to use the data to extract	Being reflective and being able to identify strength and weaknesses is an essential skill that all need	Being able to decided what data is biased or reliable is an effective skill used across a range of careers.

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		information. This will enable them to be able to use this knowledge to be able to recognise effective practice today and in the future.	collecting data, why it needs to be collect and what to do with it once data has been collected and stored. Knowing this will support students in today and in the future by allowing them, if they should collect data know how to handle it without breaking the GDPR.	everyday life, whether it is planning a project at home or in the workplace.	information from and be able to represent it to a range of audience. This will be useful in a range of career roles. In addition, creating data dashboards will support pupils with the delivery of data in a visual way. The skills taught will support students with managing finances if they are self-employed in the future. For example, creating invoices and working out how much money to pay staff and how to calculate tax.	to learn. If pupils can identify what is goof about a project and what they need to develop then the project can move forward more successfully,	Understanding how patterns and errors can arise in a data set is imperative as the world around the pupils is consistently presented data.
	Keystone vocabulary	User interface Hardware and software Audience Demographics Design Efficient	Data Information Processing Quantitative Qualitative Threats to data Data collection	Planning tools - Gannt Planning methods – Waterfall, agile and scrum Proposal Constraints Requirements Timescales Design	Formulae Absolute Macros Conditional formatting Formatting Presentation	Purpose Audience East of use Accessibility	Trends Patterns errors Biased Misinterpreted
	Links to prior learning	ICT – Students apply what they know about operating systems from 'how computers work' computer systems and software applications Year 7 (2019-2020) Basics and computer safety Small Basic How Internet works P Animation use technology responsibly	Creative Data computer basics sequences Python Small Basic	Business: students can draw on knowledge and skills in business: plans, timescales and planning. Y9 web development and Python – testing programs to see if they work. Student can use and apply knowledge about audience and purpose from web development use technology responsibly (2021-22) Python	Life Skills Year 10 Year 7 spreadsheet modelling	All topics within the computer studies curriculum allow for pupils to identify strengths and areas to improve.	How to find reliable and trustworthy information is – Year 7

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				Photoshop Creating Animations Website Development			
	Cross-curricular and careers links	Listening, speaking, staying positive, problem solving, team work, creative, aiming high	thinking skills Listening, speaking, staying positive, problem solving, team work, creative, aiming high (Using Formula in ICT that uses similar constructs to mathematical equations)	Listening, speaking, staying positive, problem solving, team work, creative, aiming high Business studies – GCSE Business plan and planning a project.	Listening, speaking, staying positive, problem solving, team work, creative, aiming high	Listening, speaking, staying positive, problem solving, team work, creative, aiming high Designing of interface uses drawing skills related to art)	(conclusions – Science) Maths – making recommendations based on data given for example, data shows that more females booked camping trips than males did.
	Links to future study	Learners who generally achieve at Level 2 across their Key Stage 4 learning might consider progression to: ● A Levels as preparation for entry to higher education in a range of subjects ● study of a vocational qualification at Level 3, such as a BTEC National in IT, which prepares learners to enter employment or apprenticeships, or to move on to higher education by studying a degree in the digital sector. Web development – creating a user interface A-level - Computer Science Digital media – creating a media product. BTEC Level 3 National Diploma in Information Technology Unit 2: Creating Systems to Manage Information specifically linking to component 2 and the collection of information and data. These skills could support vocational apprenticeship roles and trainee/entry-level roles, such as roles in administration, help desk support, help desk analysis, account management and customer service support.					
	Assessment	Knowledge Quizzes	Small Practice Skills Assessment Mock Assessment Knowledge Quizzes	Small Practice Skills Assessment Mock Assessment Knowledge Quizzes	Small Practice Skills Assessment Mock Assessment Knowledge Quizzes	Small Practice Skills Assessment Mock Assessment Knowledge Quizzes	Small Practice Skills Assessment Mock Assessment Knowledge Quizzes
	Homework		Know It All Ninja	Know It All Ninja	Know It All Ninja	Know It All Ninja	Know It All Ninja