THE ABBEY SCHOOL
A BUSINESS & ENTERPRISE ACADEMY

ICT and Computing

Year 9
Scheme of Learning 2024- 2025

Subject Leader Mr S Dannell

Topics by Term	Topic Overview for Year Group					
	Term 1	**Term 2**	**Term 3**	**Term 4**	**Term 5**	**Term 6**
Topics Taught	T1 Characteristics of data and information T2 Representing information T3 Ensuring data is suitable T4 Data collection T5 Quality of information T6 Sectors that use data modelling T7 Threats to individuals	T1 Spreadsheet basics T2 Data manipulation methods T3 Other processing methods T4 Producing a dashboard T5 Producing a dashboard with pivot tables T6 Concluding and reviewing presentation methods	**Practise Comp 2**	Comp 1 Pack A User interface design Topic 1 - User interfaces Topic 2 - Factors and influences Topic 3 - Audience needs Topic 4 - Design principles Topic 5 - Design psychology Topic 6 - Designing efficient user interfaces	Pack B Project planning and development Topic 1 - Project planning techniques Topic 2 - Creating project plans Topic 3 - Initial designs Topic 4 - Developing a user interface Topic 5 - Review	**Practise C1**

Topics Prerequisites	Basic knowledge of IT or Computing learned during Key Stage 2 However new topic for year group	Possible from KS2. Regarding spreadsheet skills. What is data from Term 1 Basic knowledge of IT or Computing learned during Key Stage 3. Prior experience of spreadsheets will be useful, but is not essential to teaching this unit if sufficient time is available to carry out all materials.	**Practise Assignment for Component 2. All learning from Term 1 and 2**	New topic completely to all. No Prerequisites. However PowerPoint skills from previous KS will be needed. Pupils would have used some sort of interface in their lives (without knowing what they are called) I.E. McDonalds and supermarket self-serving tills		
Why Now	These teaching materials cover Component 2 Learning Aim A of the 2022 BTEC Level 1/Level 2 Tech Award in Digital Information Technology (DIT) specification. The seven topics follow the order of topics given in the specification. Many examples and discussion points present key points that students will be	These teaching materials cover Component 2 Learning outcomes B & C of the 2022 BTEC Level 1/Level 2 Tech Award in Digital Information Technology (DIT) specification. The six topics follow the order of topics given in the specification. Many examples and discussion points present key points that students will be	A final assessment with exam-style questions covering the material in Learning outcomes A & B & C is given. This final assessment gives an opportunity for students to demonstrate what they have learnt in the unit.			

	able to draw upon in their assignment brief. Learning what Data/Information is it vital before you can manipulate it	able to draw upon in their assignment brief.				
Week Times	**6 Weeks**	7 Weeks	6 Weeks	6 Weeks	6 Weeks	7 Weeks
Additional Information	• Homework will be co-ordinated using know it all Ninja • The purpose of this scheme of learning is to provide students with the skills needs to undertake the BTEC course effectively from year 10					

Exam Board Pearson BTEC (as of year 10)						
Specification References	**Big questions**	**Topic area: main Items and learning objectives** **All: Pass** **Most: Merit** **Some: Distinction**	**Outcomes**	**Key Terms/ concepts** **Literacy** **Numeracy**	**Assessment and homework tasks**	**Resources And personal delevempoemtn**
Term 1 and 2						
Week 1	**Topic – What is a spreadsheet?**					
	1. What is a spreadsheet? 2. Can you describe the features of a spreadsheet?	**All**: Use the main operators to develop simple formulae **Most**: Use the SUM function to add up a range of numbers **Some**: combine the formulae in one sheet and apply this to a scenario.	Students will develop an understanding of a spreadsheet and will be able to recall the different features of a spreadsheet. They will develop the understanding and begin to use simple formulae within excel	• Cell • Row • Column • Cell reference • Formula • Operators	AFL – Questioning and quiz	Excel
Week 2 + 3	**Topic – Collecting data**					
	1. Can you describe the difference between primary and secondary data and collect data for a given scenario using these? 2. Can you explain the features of your data and what is meant by big data? 3. Can you use basic formulae within excel?	**ALL**: Learners can describe the different methods of collecting data **MOST**: Learners understand the features of data and what is meant by big data **SOME**: Students gather data for a given scenario using both methods of data collection	Learners will understand how the data collection method and data collection features affect its reliability Learners will collect data from a variety of sources with a given scenario	Data collection methods: o primary data o secondary data 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. Big data: o definition of big data • o collection of big data	Students are quizzed on their knowledge of key concepts Students to peer assess eachothers data collection providing verbal feedback	Excel Powerpoint Teacher tasks Computers Textbooks

				formulae, e.g. add, divide, subtract, multiply		
Week 4-6	**Topic – Decision-making functions**					
	1. Can you describe the purpose of different decision-making functions? 2. Can you use different decision-making functions?	**ALL**: Learners can describe the purpose of the different decision-making functions **MOST**: how to use some of the decision making functions and can choose the right one in the right context. **SOME**: Students effectively use multiple functions in the right context	Lesson 1 in the week will be dedicated to the term 1 assessment Students are able to recall the different decision-making functions used and their purpose Students are able to use decision-making functions appropriately with a given scenario	decision-making functions, e.g. IF, WHATIF, SUMIF	Invoice task Term 1 assessment Starter – quick q'z Plenary - AFL	Excel Powerpoint Teacher tasks Computers Textbooks Term 1 assessment
Term 2						
Week 1-2	**Topic – Lookup functions and conditional formatting**					
	1. Can you effectively use different lookup functions? 2. Can you use conditional formatting with a given set of data? 3. Can you explain the purpose of lookup functions and conditional formatting?	**ALL**: Learners can describe the purpose of lookup functions and conditional formatting **MOST**: Learners use some of the lookup functions and conditional formatting tools with the right context **SOME**: Students effectively use multiple functions and conditional formatting tools in the right context	Students are able to effectively format data with the use of conditional formatting and they understand the purpose of doing this. Using lookup functions enables students to enhance their skillset within excel and to process data in differing ways They will be apply to processing and formatting to a set of given data	lookup functions, e.g. VLOOKUP, HLOOKUP Relative and absolute cell referencing conditional formatting, e.g. data bars, colour scales, icon sets	Starter – quick q'z Plenary - AFL	Excel Powerpoint Teacher tasks Computers Textbooks
Week 3-4	**Topic – Sorting and filtering**					
	1. Can you effectively sort the data given to you?	**ALL**: Learners are able to show the ways to sort and filter data	Students will develop skills in being able to sort and filter data effectively.	sorting, e.g. sorting multiple columns and values	Starter – quick q'z Plenary - AFL	Excel Powerpoint Teacher tasks Computers

	2. Can you filter data in response to specific requests?	**MOST**: Learners can choose appropriate methods of sorting and filtering data **SOME**: Learners can effectively sort and filter data for a specific set of requests	Students will have an understanding of how to filter a set of data with different processes to provide accurate information in response to a series of requests	filtering, e.g. greater than, less than, equals, contains, begins with, ends with		Textbooks
Week 5-6	**Topic – Creating graphs and charts**					
	1. Can you describe the process for creating and graph/chart in excel? 2. Can you explain why a graph is used to present data? 3. Can you create a graph/chart from a set of given data?	**ALL**: Learners are able to describe the process for creating a graph/chart in excel **MOST**: Learners can create a graph/chart **SOME**: Learners can explain why a graph is used to present data	Students will be able to create a graph and chart with a given set of data From this, students will be able to explain the purpose of presenting the data in this way	graphs/charts, including dynamic charts/graphs	Starter – quick q'z Plenary - AFL	Excel Powerpoint Teacher tasks Computers Textbooks
Term 3						
Week 1	**Topic - Impacts of technology**					
	1. How does technology impact us? 2. Can you describe positive and negative impacts of modern technologies on organisations? 3. Can you describe positive and negative impacts of modern technologies on individuals? 1.	**ALL**: Learners are able to describe how technology can impact us **MOST**: Learners know the positive and negative impacts of modern technologies on organisations and individuals **SOME**: Learners can describe the positive and negative impacts of modern technologies	Students will be able to show how modern technologies can impact a business and an individual applying this to real-life examples	Modern technologies Impact Infrastructure Flexibility Inclusivity Platforms Working styles Hardware	Starter – quick q'z Plenary - AFL	Powerpoint Teacher tasks Computers Textbooks
Week 2	**Topic – Cyber Security**					
	1. Can you identify why systems are attacked and what internal and external threats there are?	All students can identify internal and external threats. Most students can outline the internal and external threat	Learners should understand why systems are attacked, the nature of attacks and how they occur, and the potential impact of breaches in security	Hacking Unauthorised access Malware		Powerpoint Teacher tasks Computers Textbooks Worksheets

	1. Can you describe the impact of a security breach?	Some students can describe the impact of a security breach	on the organisation and stakeholders.	Unintentional disclosure of data Downloads Loss of data Damage to puble image		
Week 3						
Week 4						
Week 5						
Week 6						
Week 7						
Term 4						
Weeks 1 and 2						
Week 3 4						
A2 audience needs						
Weeks 5 & 6	Topic: Design principles					
Term 5						
Week 1						

Week 2						
Week 3						
Weeks 4 and 5						
Week 6						
Term 6						

Year 9 / Term 4

BTEC Tech Award in Digital Information Technology
Link to Specification online here

Component 1: Exploring user interface design principles and project planning techniques

Specification o References	Periods	Topic Area: Main Items	Outcomes that students should be able to	Key Terms / Concepts (literacy)	Assessment	Resources
		Learning aim A: Investigate user interface design for individuals and organisations **TOPIC 1**				
Comp 1 **LA - A1**	**5**	• A1 What is a user interface?	**Lesson 1:** • To understand what a user interface is	-User interface -Human–device interaction	**Introductory activities** ● Students are introduced to the term 'user interface'. ● Students work in pairs to discuss and identify the tasks that a shop assistant may want to complete using an electronic till and the tasks an individual may want to complete using a self-service ticket machine. ● Teacher introduces Component 1 and explains that students will learn about the different types of user interface, the different design principles that can be used to design effective user interfaces and apply project planning techniques to create a user interface. **Main session activities** ● Students are introduced to the different features, including human features, software features and how they facilitate users. ● Students think of example uses of user interfaces, including: computers, handheld devices, entertainment systems, domestic appliances, controlling devices and embedded systems. ● In pairs, students discuss experience using different devices with different user interfaces. ● Students compare ideas and experiences of tasks they have undertaken on different devices, considering the methods used and how successful they were.	**Class Notebook task 1 LA-A** Access to the internet

					● Students work in pairs to name other devices that have a user interface. **Plenary activity** Students confirm their understanding of 'user interface', giving features of – and example interactions with – a user interface.	
			Lesson 2 • To understand the main types of basic user interfaces	-Textual interface -Command Line Interface	**Introductory activities** ● Students are introduced to the idea of a textual interface. ● Students work individually to memorise a short list of commands that could be used within a textual interface, e.g. ls, (list contents of directory and files), cd (change directory), mkdir (create new directory), grep (search text), chmod (change mode), passwd (change password), symlink (symbolic link). ● Students spend 20 seconds looking at the commands and then write out as many commands as they can remember. ● Students discuss how they found the task and how successful they were. They consider the implications of having hundreds of commands to remember. **Main session activities** ● Students are introduced to text-, form- and menu-based user interfaces, the key characteristics of each and when they would be used. ● In pairs, students research different examples of text-, form- and menu-based user interfaces and explain their suitability for the tasks they are being used for. ● Students give four example uses for each type of user interface. ● Students give benefits and drawbacks for each type of user interface. **Plenary activity** Students work with a partner to discuss which type of interface may be used on a smartwatch and justify their choice.	**Class Notebook task 2 LA-A** Including: Images showing examples of different text-, form- and menu-based user interfaces.
			Lesson 3 • To understand the main types of complex user interfaces	-GUI/WIMPs -Embedded systems -Controlling devices	**Introductory activities** ● Students are introduced to the concept of 'trial and error' and how user interfaces should allow users to use this approach when completing new tasks for the first time.	**Class Notebook task 3 LA-A** Including:

					• Teacher introduces a specific task for students to complete using a device. This could be to find a certain program/file or to change a specific setting. • Students assess how they achieved this and the strategy used to complete the task. • Students discuss how this may have been different if a text-, form- or menu-based user interface was used (referring back to the previous lesson). **Main session activities** • Students are introduced to graphical-, sensor- and speech-based user interfaces, the key characteristics of each and when they would be used. • In pairs, students research different examples of graphical-, sensor- and speech-based user interfaces and explain their suitability for the tasks they are being used for. • Students give four example uses for each type of user interface. • Students give benefits and drawbacks for each type of user interface. **Plenary activity** Students describe two ways in which supermarket self-checkouts could make use of graphical-, sensor- and speech-based interfaces.	mages showing examples of different graphical-, sensor- and speech-based user interfaces.
			Lesson 4 • To understand the key factors when designing and creating a user interface	-Performance/ response time -Accessibility	**Introductory activities** • Students visit an app store on their device to search for a GCSE Maths revision app for use on a smartphone. • Students decide which app they would use based on the app's reviews and justify reasons for their decision. **Main session activities** • Students work in groups to discuss factors that need consideration before choosing a user interface and share their ideas with the class. This should include: performance, user requirements, ease of use, user experience, accessibility and storage space. • Students work in groups to decide and justify the four most important factors to consider when choosing a user interface for a doctor's surgery.	**Class Notebook task 4 LA-A** A variety of screenshots of the different types of user interfaces from different apps or able to visit apps of a pupil phone/device.

			Lesson 5 • To understand How hardware and software affect user interfaces	-Operating systems/platforms -Processing power -Emerging technologies,	• Students continue to work in groups and think of a different scenario that requires a new user interface. They must decide and justify the four most important factors to consider when choosing a user interface for the company. • Students reflect on how and why these are different to the doctor's surgery. **Plenary activity** Using the information they have gathered from their discussions in the main activity, students rank all the factors in order from the highest to lowest priority. **Introductory activity** • Students consider their experience of using the same website on two different devices or platforms and how the user interface and features differ on each. **Main session activities** • Students research the hardware and software available on a desktop computer, mobile phone and a digital watch of their choice and use word-processing software to record their findings. Students may want to create a table with the following headings: operating system, size of screen, type of screen, method of user input, processing power and amount of RAM. • In pairs, students discuss how the hardware and software differs between the three devices. • In pairs, students discuss how the hardware and software available on each device will impact on the type and design of the user interface. **Plenary activity** Students are given specific information about a device's components and must consider how these components impact the user interface.	**Class Notebook task 5 LA-A** Two different devices (e.g. desktop and mobile phone or tablet). If it is not possible for students to use two different devices, then students can be given screenshots of the same user interface on two different devices. **Learning Aim Summary Quiz 1**
		TOPIC 2				
Comp 1 LA – A2	**2**	• A2 Audience needs	**Lesson 1** • To know that a user interface must be accessible to the needs of the many	-Accessibility -Skill level -Demographics	**Introductory activity** • Students are introduced to the word 'accessibility' and what it means.	**Class Notebook task 6 LA-A** Different application software that contains

					● Students work alone to consider the accessibility options that are commonly found in smartphones and computers. They make a list of available options and why a user may choose them. **Main session activities** ● Students research the meaning of inclusion. ● In pairs, students discuss how a user might feel if they have a specific need and are unable to access all areas of a user interface. ● In pairs, students research and consider how user interfaces can be adapted to support different needs. This includes: visual needs, hearing needs, speech needs, motor needs and cognitive needs. ● In pairs, students select two programs that serve different purposes. They annotate screenshots to show how accessible features could be used to help users with specific needs. ● Students discuss how they could further develop accessibility features to better support users. **Plenary activity** Students consider how a user interface for a local college application form can be adapted for users with visual, hearing and speech accessibility needs.	different accessibility features for students to explore.
			Lesson 2 • To understand what a 'skill' is and that different people have different skills		**Introductory activities** ● Students to understand what a 'skill' is and that different people have different skills. ● Students to consider the range of digital skills in their own families and how different age groups use devices. ● With a partner, students think about what advice they would give to a developer to help them design a user interface for people with limited digital skills. **Main session activities** ● Students are introduced to the terms 'expert', 'regular', 'occasional' and 'novice' user.	**Class Notebook task 7 LA-A** To research different jobs that require different levels of IT skills, e.g. journalist, receptionist, police officer, personal trainer, engineer, hospital nurse, business administrator.

					• Students to think of example skills that each type of user would have and justify their reasons. • Students to research different jobs that would require a person to have expert, regular, occasional and novice computer skills. • Students are introduced to the different user demographics, including: age, past experiences, beliefs/values and culture. • Students to consider a program that is aimed at children aged 4–6 and teenagers aged 13–15. The program should encourage young people to lead a healthier and active lifestyle. • With a partner, students consider what experiences they think children and teenagers will have of using different devices. • Still in pairs, students discuss how these different experiences will impact on the design of the user interface. **Plenary activity** Students are given different devices and programs and then are asked to categorise themselves as expert, regular, occasional or novice users. Students explain their decisions to a partner.	
		TOPIC 3				
Comp 1 LA – A3	**6**	• A3 Design principles	**Lesson 1** • To understand visual brand and identity of a company or organisation.	-Font style/size	**Introductory activity** • Students review the centre's correspondence documents and website to identify elements of branding and visual identity. • Students should consider the elements that are the same across all correspondence and what the benefits of this are. **Main session activities** • Students are introduced to how they can make effective use of colour, including: using limited colours and organisational colours, ensuring colours don't clash and using textures. • Students are introduced to how they can make effective use of font styles and sizes, including: use of appropriate font types, avoiding decorative fonts and ensuring the font style and font size are readable.	**Class Notebook task 8 LA-A** Examples of centre's logo, stationery and other documents (e.g. website, newsletter, centre uniform, etc.). Access to the internet to look at different images of different user interfaces that make effective and ineffective use of visual elements.

			Lesson 2 • To understand how you can make effective use of language within an app or website	-Use of language	● In pairs, students consider how colour, text size and style are used effectively when designing a student interface. Students may want to refer to different user interfaces that they have used previously. ● In pairs, students find examples of user interfaces that effectively use these elements and those that use them less effectively. Students could take a screenshot of each user interface then annotate them to show how it has made effective or ineffective use of visual elements. **Plenary activity** Students write a list of dos and don'ts when using colours and fonts in a user interface. **Introductory activities** ● Give students 20 words to try to remember in 1 minute. Students write down as many as they can remember. ● As a class, discuss the strategies students used to remember the words. ● Students understand that the amount of information that humans can handle at any particular time is limited. **Main session activities** ● Students are introduced to how they can make effective use of language, including: making sure the language is appropriate to user needs/skill levels, using appropriate information for the task and linking the amount of information to the available whitespace. ● Students imagine they are supporting a novice user with little computer experience. ● Students write down the instructions in an ordered list that will help the user send an email. ● In pairs, students discuss how they found writing instructions for novice users. ● Students select a program of their choice. In the help menu they read a tutorial for a tool that they have never used before and try to follow it.	**Class Notebook task 9 LA-A** List of 20 words for students to remember in introductory activity. Access to email software. Access to different application software that contains suitable help menus and tutorials for students to follow and evaluate.

			Lesson 3 • To understand how to design and layout an effective user interface	-White space	● Students discuss with a partner how they found the task and how effective the amount and language of the text in the tutorial was. **Plenary activity** Students write a list of dos and don'ts for using text in a user interface. **Introductory activities** ● Students to understand what is meant by the term 'layout'. ● Students think of a program, app or website that they use regularly and without looking at it, sketch the layout of one of the pages. ● Students compare their sketch with the actual program, app or website and consider how accurate they were in recreating the design and justify their reasons. **Main session activities** ● Students are introduced to making effective use of layout, including: consistency throughout the user interface, placement of items in obvious areas, matching users' expectations, grouping related items, use of navigational components and use of input controls. ● Students choose a program or website and take three screenshots of different screens, annotating each screenshot to show how effective use of layout has been made. ● Annotations should include which items and features are the same across all screens, where they feel the screens could have made more effective use of layout, how well items are placed in prominent positions, how well the navigational components are used to allow the user to easily move around different screens and where input controls have been used and how effective they are. **Plenary activity** In pairs, students discuss why the layout of items on a user interface is important. What factors influence the layout of items on the screen?	**Class Notebook task 10** Access to the internet or device to access a user interface that contains at least three different screens, e.g. a local leisure centre website.

			Lesson 4 • To understand user expectations in web design	- Navigational Components	**Introductory activity** ● Ask students to visualise giving a tablet computer to a toddler and consider how the toddler might react and what they are likely to do. ● Students to discuss a situation when they have tried to complete a task on a computer but were unable to complete it successfully. Students to discuss how this made them feel. **Main session activities** ● Students to think of what immediately comes into their mind when they hear positive high-pitched sounds and negative low-pitched sounds. ● Give students an example of audio that may sound when a file is deleted. Students to discuss their immediate reaction to the sound. ● Students to think of three other situations of when a positive high-pitched sound and sharp negative low-pitched sound may be played while using devices. ● Students to think of what immediately comes into their mind when they see the colours red, amber and green. ● Students to think of what immediately comes into their mind when they see ticks and crosses. ● Ask students to imagine they want to change their password. Give an example of a green tick appearing on the screen to confirm that the password meets the password complexity rules. ● In pairs, students think of three other situations when green and red may be used to indicate that something has been successful or unsuccessful on the screen. **Plenary activity** Students share their answers to the main activities with the rest of the class and discuss any similarities and reasons for similar responses.	**Class Notebook task 11 LA-A** Search YouTube for video '9 Month Old Baby Using iPad'. Search YouTube for video 'A 2.5 Year-Old Has A First Encounter with An iPad'. Example sounds that devices play to confirm a successful user interaction or when an error has occurred.

			Lesson 5 • To know how to key a user engaged when using an app or website • To be able to retain user attention **Lesson 6** • To know the main tools and features that can be used to create intuitive user interface design	-Intuitive design	**Introductory activity** ● Students to think of a lesson or part of a lesson where they lost their attention. Students consider what factors contributed to this. ● Students to consider the implications of users losing their attention while using a user interface. **Main session activities** ● Students are introduced to the different tools and features that can be used to keep the user engaged, such as: methods to grab attention, use of uncluttered screens, use of tip text, use of labels, use of default values and use of autofill. ● In pairs, students familiarise themselves with a program or website. Students should focus on one tool or feature that their partner has not used before. ● Students learn how to use the tool or feature, and then ask their partner to use it without any help. ● Students observe their partner completing the task. Their partner should say what they are thinking at each stage and then make notes on how they found the task. Students should record how their partner completed the task or if they lost their attention on the task and why. **Plenary activity** Students list three methods that can be used to sustain the attention of a user while they are using a user interface. **Introductory activity** ● Students to be introduced to the meaning of the word 'intuitive'. ● Students list five computer skills they have learned and can now use without thinking about them. ● Students to justify their reasons for this. **Main session activities** ● Students are introduced to the different tools and features that can be used to create intuitive user interface design, including: graphics to denote what buttons do, helpful pop-up messages, help features, consistency and easy reversal of actions.	**Class Notebook task 12 LA-A** **Class Notebook task 13 LA-A** Access to the internet to allow students to undertake research. Productivity software that contains multiple programs within the same suite with similar

					• In pairs, students choose some productivity software available to them and look at the user interface within the different programs to assess what features are the same and different across all programs. • In pairs, students investigate a program within the suite that they have not used before. They should consider if they would be able to work out how to use the program based on their knowledge of the other programs they have used. Students explain their answers. • Students open word-processing software and look at the images used for the following tools: copy, paste, print, spelling and grammar. Students give reasons why they think these graphics have been used and assess how effective they are. **Plenary activity** • Students confirm their understanding about what the word 'intuitive' means. Students explain how to achieve an intuitive design and why intuitive design is important in a user interface.	user interface features (Microsoft® Office etc.)
		TOPIC 4				
	2	• A4 Designing an efficient user interface	**Lesson 1** • To know how to improve the speed of a user interface	-Keyboard shortcuts -Informative feedback	**Introductory activity** • Students think of an app, website or program they have used that has run slowly and consider how it made them feel – angry, frustrated etc. Students should discuss why they felt this way. **Main session activities** • Students are introduced to the different tools and features that can be used to improve the speed of user interfaces, including: use of keyboard shortcuts, reversal of actions, informative feedback and distinguishable objects. • In pairs, students research five different keyboard shortcuts for either a Windows PC or Apple Mac computer. For each shortcut, they say what the shortcut is and what it does. • Students visit a website where they could purchase products and place some items in their shopping basket. If school policy does not allow this activity, teacher could demonstrate this on the interactive whiteboard for the whole class to observe and discuss together.	**Class Notebook task 14 LA-A**

					• Students try to change the options of the items they have selected and try deleting the items from their shopping basket. STUDENTS SHOULD NOT ENTER ANY PAYMENT DETAILS. • Students discuss how easy it was to make changes and explain their reasons to the class. • Students screenshot the website and paste it into word-processing software. They annotate the screenshot to show which areas provide information, which areas allow the user to carry out an action and which areas allow data to be entered. **Plenary activity** Students discuss what design features could be used to help users interact with an interface more efficiently.	
			Lesson 2 • To know how to reduce the users selection time	-Reduction of selection time -Related objects	**Introductory activity** • Students throw a dice on to an A4 sheet of paper placed on the floor. Then reduce the size of the paper by half and throw the dice again until it lands on the paper. They keep repeating this process and assess what happens as the size of the paper gets smaller, i.e. that the size of objects directly affects accuracy and user interaction time. **Main session activities** • Students are informed of the different factors that influence user interaction time: time to think about which option to select, time to move your cursor to the object, time to select the object and then time for the user interface to respond. • Students are introduced to the different tools and features that can be used to improve the access of user interfaces, including: appropriate object sizes, object emphasis and grouping related objects. • Students go to a website they use often and set the zoom setting to 150% and navigate around the website by clicking on the different buttons. Then set the zoom setting to 100%, 50% and 25%. As the objects get smaller, students assess how their	**Class Notebook task 15 LA-A** Dice. A4 paper. Access to the internet. Web browser/alternative software to allow students to change the zoom settings from 200% to 25%.

					experience of using the website changes, with the focus on how their interaction speed changes. ● In pairs, students decide how they would group the following tools in word-processing software into related areas, naming them and justifying the selection for each area: Find, Copy, Blank page, Grammar check, Chart, Shapes, Paste, Clip art, Page borders, Header, Page orientation, Spell check, Footer, Margins, Word art, Replace and Page size. ● In pairs, students think of other tools that they could put in each area. **Plenary activities** ● Students list the factors that influence the amount of time it takes for each interaction between the user and a device. ● Students write down three methods that can be used to reduce selection times.	

Year 9 / Term 5

BTEC Tech Award in Digital Information Technology

Link to Specification online here

Component 1: Exploring user interface design principles and project planning techniques

Specification o References	Periods	Topic Area: Main Items	Outcomes that students should be able to	Key Terms / Concepts (literacy)	Assessment	Resources
		End of Learning Aim A mock and real assessment				
LA - Assessment	**5**	• **Preparation for assessment: recap of Learning aim A**	Learners will prepare for the final assessment	Recap keywords above	**Introductory activities** ● Teacher recaps topics covered in Learning aim A. **Main session activities** ● Students practise for assessment independently, using suggested activities below. ● **Suggested activity 1:** choose two different types of user interface. For each of their chosen user interfaces, students identify where different design principles have been used, assess how the different design principles improve the effectiveness of the user interface for its users, assess the positive and negative effects that each design principle has and assess how each design principle supports the user to efficiently use the interface. ● **Suggested activity 2:** for each of their chosen user interfaces above, students describe how intuitive the user interface is and how it could be developed further to better meet the needs of users, assess to what extent the interfaces support users with different accessibility needs, skill levels and demographics, assess to what extent they match user perceptions and the methods that are used to sustain the users' attention, assess their suitability and describe an alternative user interface that could have been used and give clear reasons why the alternative type of user interface would better meet the user needs. **Plenary activities** ● Students to reflect on how they approached the practice activities, including areas they enjoyed and areas they found more difficult.	**Class Notebook** **Assessment LA-A**

		End of Learning aim A: formal assignment			**Introductory activity** ● Teacher introduces assignment brief for Learning aim A and discusses the criteria, explaining the command words used. ● Teacher leads a check on understanding of key terminology. ● Teacher reminds students that the assignment is formal and must be their own work. Once it has been submitted it cannot be revised or modified. They suggest students make notes to plan their response. **Main session activity** Students complete an assignment in class under controlled conditions	**Class Notebook** Pearson authorised assignment brief or brief produced and verified by the school
		Learning aim B: Use project planning techniques to plan and design a user interface **TOPIC 1**				
Comp 1 LA – B1	**3**	● **B1 Project planning techniques**	**Lesson 1** ● To know the key project methodologies and how they would be used	-Methodologies -Waterfall -Iterative, e.g. Agile.	**Introductory activities** ● In pairs, students research an IT project that has failed and share their findings with the class. For example, this could be a website that had been partly developed or a large-scale system that had been partly developed and then abandoned. ● Students should then find out and discuss the reasons for this. Students should try to tease out the root of the problem. For example, rather than saying 'poor planning', students should look at the reasons why the planning was poor. For example, not planning the budget properly or not considering all client needs properly. **Main session activities** ● Students are introduced to what a project methodology is and the different project methodologies, including the waterfall model and iterative/agile model. ● In pairs, students discuss reasons why waterfall and iterative methodologies would be used. ● In pairs, students research the benefits and drawbacks of using each methodology and share their findings with the class. ● Working alone, students explain why a company such as a mobile phone app developer would make use of an iterative/agile methodology when creating user interfaces for their apps rather than a waterfall methodology.	**Class Notebook task 1 LA-B** Case studies of IT projects that have failed or been abandoned. For example, search for 'IT's biggest project failures – and what we can learn from them' on https://www.computerworld.com. Search for 'List of failed and over budget custom software projects' on https://en.wikipedia.org

			Lesson 2 • To know the purpose of planning techniques and how they are used to plan and track progress within a project.	-Gantt charts -Critical path diagram -PERT charts -Mood boards	**Plenary activities** ● Students explain the common reasons why projects fail. ● Students give reasons why an iterative methodology would be used. ● Students give reasons why a waterfall method would be used. **Introductory activities** ● Students think of a project they have completed in school or at a club and consider what methods – if any – they used to plan and track the progress of tasks. Students consider how useful their plan was and if they continued to work with it. ● If students have not made use of a project plan, then students can consider why they didn't have one and the impacts of not creating one. **Main session activities** ● Students are introduced to the purpose of and shown how to create Gantt charts, PERT charts and critical path diagrams. ● Students are introduced to the key terms: 'task dependency', 'task length', 'slack time' and 'critical path'. ● Provide students with the following time scales and dependencies: Task A – 1 day, no dependencies; Task B – 3 days, dependency on A; Task C – 60 days, dependency on B; Task D – 1 day, dependency on A; Task F – 2 days, dependency on C and E; Task G – 15 days, dependency on F; Task H – 40 days, dependency on E and G. Students use the data to create a Gantt chart, PERT chart and critical path diagram. ● Students continue to work in pairs to research the benefits and drawbacks of each diagram. **Plenary activities** ● Students give examples of three diagrams that can be used to plan time in a project. Students explain how these diagrams are different and the information they contain.	**Class Notebook task 2 LA-B** Suitable software to create Gantt charts, PERT charts and critical path diagrams. Alternatively, students may find the task easier if they draw these diagrams on paper.

			Lesson 3 • To know the main basic project planning tools.		**Introductory activities** ● Students read the project brief for GameExchange123. ● Students imagine they have been asked to create a new user interface to meet the project requirements stated in the project brief. ● Students consider how they would approach the project and where they would start. **Main session activities** ● Students should explore the project brief. They should read through the brief, filter out the information that is not important and then start to think about what is actually required. Students are required to use this project brief throughout the remainder of this component and therefore would benefit from having a good understanding of what is required. ● Students are introduced to basic tools that they can use to plan their project. These include task lists, graphical descriptions, written descriptions and mood boards. ● Students create their own mind map to illustrate a graphical description of the project brief. ● In pairs, students produce a written description of the buying page requirements given in the brief. Students then discuss the benefits and drawbacks of using graphical and written descriptions for this project. ● In pairs, students research different examples of mood boards on the internet. ● Students discuss their initial reactions to the mood boards and what feeling they think each mood board creates. **Plenary activities** ● Students give examples of tools available to allow people to plan their projects. Students give benefits and drawbacks for each method they have identified.	**Class Notebook task 3 LA-B** Copies of GameExchange123 case study (see Appendix A). Access to the internet to research different mood boards. For example search on Pinterest or https://tinkerlab.com/

		TOPIC 2				
Comp 1 **LA – B2**	**5**	B2, Create a project plan	**Lesson 1** • To understand the basic principles of planning a project	-project aim -project objective -project audience -project purpose -SMART aims / Objectives -Timescales -Constraints	**Introductory activities** ● In pairs, students choose a club they are familiar with, such as a local sports team or a club or team they are involved with in school. ● Students describe the aims of the club and how these are achieved by the activities offered by the club. **Main session activities** ● Students are introduced to the terms 'project aim', 'project objective', 'project audience', 'project purpose'. ● Students review the general objectives for GameExchange123. ● In pairs, students write three SMART objectives for the GameExchange123 project brief. ● In pairs, students write down the purpose of the GameExchange123 system and explain why it is being created. ● 75% of GameExchange123 customers are aged 18 to 25. Students discuss what they would need to consider about the 18–25 age range when they are designing the user interface. **Plenary activities** ● Students explain what the acronym SMART stands for. Students describe why it is important to consider the audience and purpose of a project before starting.	**Class Notebook task 3** **LA-B**
			Lesson 2 • To be able to define a project requirements		**Introductory activities** ● Students think about the way they travel to school in the morning. ● Students make a list of possible factors that could influence the amount of time it takes them to travel there (e.g. possible risks that might influence them getting to school on time). **Main session activities** ● Students are introduced to the terms 'constraint' and 'risk'. Students should understand the difference between each of these terms. ● Students are introduced to the different constraints in a project, including time, resources, task dependencies and security. Students should try to think of other possible constraints.	**Class Notebook task 3** **LA-B**

			Lesson 3 • To know the main types of project constraints and risks		● Students are introduced to the different risks in a project, including operational loss, financial loss and damage to an organisation's reputation. Students should try to think of other possible risks. ● Students should read the project brief for GameExchange123 and consider the possible project constraints in their school. They should consider the time and resources (e.g. hardware and software) available to them, as well as the security constraints in their school. ● Students are told that GameExchange123 has roughly 500 000 users and the yearly revenue is £6.2 million. ● In pairs, students should then discuss the possible risks the project could have for the company and devise a suitable contingency plan. **Plenary activities** ● Students demonstrate their understanding of the term 'constraint'. Students explain how knowledge of constraints helps when developing a contingency plan. **Introductory activities** ● Students think about what needs to be considered when planning the timescales in a project. ● Students consider how to decide whether six weeks is enough time to complete their project for ExchangeGames123. **Main session activities** ● Students are introduced to the areas that should be considered when planning the project time for a project. This should include when tasks (including subtasks) will occur, key milestones and when the resources will be needed. ● Students complete tasks in the context of the GameExchange123 project brief. ● Students work in pairs to produce a suitable diagram, such as a Gantt chart or PERT chart, that shows how they would spend their time in this project. ● Students' diagrams should include: the overall timescale from the project's start to its end; when tasks and subtasks will be	**Class Notebook task 3 LA-B**

			Lesson 4 • To know what to consider when planning project time scales		completed; and the key milestones to include when reviews with the client will be carried out. **Plenary activities** ● Students demonstrate their understanding of the considerations when planning the timescales for a project. Students explain why it is important to plan key milestones and reviews in projects. **Introductory activities** ● Students are told what a design specification is. ● Students should then think of where they have created a design specification before. They should consider what they used it for and how useful it was. If they have never used one before, then students should consider who may find design specifications useful. **Main session activities** ● Students introduced to the areas they should consider when creating a design specification. This includes increased user confidence and familiarity, reduced learning time and time to complete tasks, increased user attention and reduced need for specialist knowledge. ● Students complete tasks in the context of the GameExchange123 design specification. ● Students work in pairs and discuss how the requirements of the project are going to impact their design specification. ● Students discuss how they will create a design that will reduce the need for users to have specialist knowledge. ● Students are informed that GameExchange123 does not currently have a mobile phone app. Students work in pairs and discuss how this information is going to impact their design. **Plenary activities** ● Students demonstrate their understanding of a design specification. Students explain what they should consider when creating the various elements of the specification and why these should be considered at the design stage.	**Class Notebook task 4 LA-B**

		TOPIC 3				
Comp 1 **LA – B3**	**2**	Create an initial design	**Lesson 1** • To be able to create sketches and storyboards	-User requirements -Design Specification -Visualisation -User attention	**Introductory activities** ● Students consider the benefits of sketching out ideas based on previous experience, for example in art and in design and technology classes. Students should consider why some people prefer to sketch out their ideas and why others don't. **Main session activities** ● Students are introduced to different tools that they can use to design the visual aspect of a project, including sketches and storyboards. ● Students work in pairs to create a storyboard for the GameExchange123 homepage. ● Students should show what the screen will look like at different stages, including: what will be initially displayed to the user, what the screen will look like while the user is entering their game search criteria and what it will look like after the user has entered their search criteria. **Plenary activities** ● Students explain the purpose of a storyboard and storyboard features. Students explain the benefits of using sketches and storyboards.	**Class Notebook task 5** **LA-B** GameExchange123 case study (see Appendix A). Different examples of sketches and storyboards. Suitable software to create a storyboard. Alternatively, students may find it easier to create their storyboard on paper.
			Lesson 2 • To be able to define the hardware, software and testing strategy		**Introductory activities** ● Students think about which software products they are familiar with and which ones could be used to develop a user interface design. Students consider which other software products available to them in school would be better to use. **Main session activities** ● Students are introduced to the different technical requirements they should consider when starting a project, such as what hardware and software they are going to need. ● Students work in pairs to select one piece of software that can be used to create smartphone apps. ● Students research the system hardware requirements of their chosen software and what peripheral devices can be used to operate it.	**Class Notebook task 6** **LA-B** GameExchange123 case study (see Appendix A).

					● Students give examples of how they can use each peripheral device within the software. ● Students work in pairs and discuss the software requirements for the homepage given in the GameExchange123 project brief. ● Students are introduced to test strategies and what they include. For example, how often testing will be carried out, how much time should be spent testing, who will be involved, what methods should be used, how errors will be fixed and when tests will be completed. ● Students work in pairs and discuss other features that could be included in the test strategy. **Plenary activities** ● Students explain how to identify the software and hardware requirements for a project. ● Students explain the term 'test strategy'. Students identify the features included in a test strategy.	

Year 9 / Term 6

BTEC Tech Award in Digital Information Technology

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Component 1: Exploring user interface design principles and project planning techniques

Specification o References	Periods	Topic Area: Main Items	Outcomes that students should be able to	Key Terms / Concepts (literacy)	Assessment	Resources
		End of Learning Aim B mock assessment				
Comp 1 LA – B	**3**	Preparation for assessment: recap of Learning Aim B	Learners will prepare for the final assessment	Use keywords above for LA B to support the assessment	**Introductory activities** ● Teacher recaps topics covered in Learning Aim B. **Main session activities** ● Students practise for assessment independently, using suggested activities below. ● **Suggested activity 1**: students use the most appropriate project planning tools to plan the different parts of the project outlined in the project brief. ● Students create a project plan that could be followed to create the user interface outlined in the project brief. This should include: o aims and objectives o audience and purpose o project requirements, including user, input and output requirements o timescales, including key milestones o risks and constraints. ● **Suggested activity 2**: students create an initial design specification for the user interface in the project brief. This should include: o a visualisation of the webpage o hardware requirements o software requirements o a test strategy. **Plenary activities**	**Class Notebook Assessment LA-B**

					Students to reflect on how they approached the practice activities, including areas they enjoyed and areas they found more difficult. Students keep notes ready for final assessment at the end of Learning aim C.	
		Learning aim C: Develop and review a user interface **TOPIC 1**				
Comp 1 **LA – C**	**2**	C1 Developing a user interface	**Lesson 1** • To be able to develop a functional user interface	- Awareness of intended device - How the user requirements have been met -Ease of use	**Introductory activities** ● Students think of a device that they regularly use and consider what it would be like if the device only had a user interface and didn't process any data (e.g. if the buttons didn't work, the device didn't respond to voice commands etc.). ● Students consider what the device would and wouldn't be able to do. ● Students then develop the understanding that they are required to develop a user interface for their assessment that does not actually process any data. **Main session activities** ● Students are introduced to the features of a user interface that makes it functional, including outputs, inputs and navigation methods. ● Students work in pairs to complete the following tasks in the context of the GameExchange123 project brief. ○ Students sketch a user interface suitable for a mobile device, based on the GameExchange123 project brief. It should show how the interface can be used to input data and how the data is outputted back to the user. ○ Students swap their sketches with other pairs of students and feed back to each other on the appropriateness of the inputs and outputs in each design. ○ Students discuss the appropriateness of the navigation methods in the user interface. **Plenary activities** ● Students explain the features a user interface must have to make it functional. Students explain why these features are essential for a user to use the interface effectively and be able to provide feedback.	**Class Notebook 1** **LA-C** Copies of GameExchange123 case study (see Appendix A of comp 1 SoW). Software suitable for students to create the functionality of the buying page for GameExchange123.

			Lesson 2 • To the key aspects of a user interface	-Potential users - Suitability for audience and purpose	**Introductory activities** ● Students to reflect back to the previous lesson and recap what a user interface must have to make it functional. ● Students then consider what else they should do when creating their user interface. Students should think about what else the user may want to see before providing their feedback. **Main session activities** ● Students are introduced to other areas that their user interface should include as stated in the specification, including showing an awareness of the intended device, showing how the project requirements have been met, showing the overall look and feel and showing the ease of use. ● Using the sketches completed in the previous lesson, students work in pairs and discuss how the user interface shows awareness of the hardware and software found on mobile phones. Alternatively, students can do this for a different interface (e.g. one they have researched). ● Students discuss which requirements from the GameExchange123 project brief have been fully or partially achieved. Alternatively, students can do this for a different user interface. ● Students discuss which groups of people GameExchange123 could ask to test the user interface to test that it is easy to use. Alternatively, students can do this for a different user interface. **Plenary activities** ● Students give two examples of how different devices can impact the design of a user interface. Students identify the techniques that can be use used to show the overall look and feel of a user interface.	**Class Notebook 2** **LA-C** Copies of GameExchange123 case study (see Appendix A in the comp 1 SoW).

		TOPIC 2				
	1	C2 Refining the user interface	**Lesson 1** • To be able to refine a user interface	-Refining designs -Feedback	**Introductory activity** ● Students read the statement '*If a user interface follows all the design principles, then the user will be happy and have no feedback*', and decide if they agree or disagree. ● Students should justify their reasons, drawing on knowledge that they have gained from the component so far. **Main session activities** ● Students introduced to the iterative cycle that takes place when refining a user interface, including presenting the design to potential users, refining the interface to account for potential user feedback and then repeating these steps until the design is complete. ● Students work in pairs and discuss why it is important to gain feedback from potential users. ● Students discuss the benefits to the client and the project team of user feedback. ● Students discuss the possible drawbacks of involving the client and the impacts that too much user feedback can have on the project. ○ Students refer to the user interface sketches or researched examples used in the previous lesson. They write four specific questions they could ask users to gain feedback on its design. **Plenary activities** ● Students give reasons why it is important to gain user feedback. Students give reasons why it is important to gain specific feedback.	**Class Notebook 3** **LA-C** Copies of GameExchange123 case study (see Appendix A).

		TOPIC 4				
	2	C3 Review	**Lesson 1** • To know how to review a user interface	-Strengths and weaknesses of the user interface -Feedback -Potential users - Suitability for audience and purpose	**Introductory activities** ● Students explain why it is important to review the user interface. ● Students identify at which point the user interface should be reviewed and why it might not always be possible to make changes to the user interface following a review. **Main session activities** ● Students are introduced to the different areas of a user interface that should be reviewed, including: how well the user requirements have been met, suitability for the audience, suitability for the purpose, ease of use, how effectively the design principles have been met and areas that could be developed further to meet audience needs. ● Students use the user interface they created in lesson 30 'Developing a functional user interface' and practise reviewing a user interface. ● Students create checklists to support their review of the user interface to determine whether outcomes have been achieved against the areas listed above. ● Students use this information to make a list of areas that could be improved. ● Students explain how these changes will make the user interface more effective. **Plenary activities** ● Students consider why it is important to review a user interface. Students identify the factors they should consider when reviewing a user interface.	**Class Notebook 4** **LA-C** Copies of GameExchange123 case study (see Appendix A in comp 1 SoW).

			Lesson 2 • To be able to review the project planning techniques		**Introductory activity** ● Students explain why a project manager should review the effectiveness of the project management techniques they have used. Students should consider why they would still do this even though the project is complete. **Main session activities** ● Students are introduced to areas they would consider when reviewing their project planning tools, including how well the project planning tools met the needs of the task, how well the chosen methodology met the needs of the task, the impact of using an iterative approach, how they overcame project constraints and what lessons they have learnt. ● Students practise reviewing the project planning tools they created/used in Learning aim B (e.g. SMART objectives, task list, graphical/textual descriptions and time plans). ● Students use the checklists created in previous lesson to determine if these techniques were suitable for the tasks undertaken in Learning aim B. ● Students consider the areas that they did not tick and discuss the possible reasons why. ● Students discuss if they would use the same project planning techniques if they had to carry out a similar project in the future. **Plenary activities** ● Students consider why it is important to review project planning techniques. Students identify the factors they should consider when determining if the project planning techniques they used were suitable.	**Class Notebook 5** **LA-C** Copies of GameExchange123 case study (see Appendix A in comp 1 SoW).

		End of Learning Aim C mock and real assessment				
	6	**Learning aim C:** Assessment practice	Learners will prepare for the final assessment	Review the keywords of learning aim C above.	**Introductory activities** ● Teacher recaps topics covered in Learning aim C. **Main session activities** ● Students practise for assessment independently, using suggested activities below. ● **Suggested activity 1**: using suitable software tools, students develop the user interface for the web page design specification they produced at the end of Learning aim B. This should include: o the overall look and feel o how the user inputs data o how the interface responds and will output to the user o how the user navigates around the user interface o how the user interactions match user expectations. ● When students have completed their user interface they then need to gather feedback by: o presenting the user interface to potential users o allowing potential users to use the user interface, and then obtaining and recording feedback o refining the user interface to account for potential user feedback o repeat this process until the user interface is complete. ● **Suggested activity 2**: students need to review the strengths and weaknesses of their created user interface and their project planning techniques. ● Students describe how their user interface makes use of different design principles and to what extent it has made good use of these principles and how they can determine that. ● Students describe how users interact with their user interface and how easy it was for users to use and how they know this. ● Students describe how their user interface is suitable for its audience and purpose.	

		Learning aim B and C: Formal assessment			● Students state how the user interface can be further developed and then analyse how these changes would better meet the user requirements and design principles. ● Students evaluate the effectiveness of their chosen project methodology. ● Students assess the extent to which their choices helped to make the project a success. ● Students explain how they overcame project constraints. **Plenary activities** Students to reflect on how they approached the practice activities, including areas they enjoyed and areas they found more difficult. **Introductory activity** ● Teacher introduces assignment briefs for Learning aims B and C and discusses the criteria, explaining the command words used. ● Teacher leads a check on understanding of key terminology. ● Teacher reminds students that the assignment is formal and must be their own work. Once it has been submitted it cannot be revised or modified. They suggest students make notes to plan their response. **Main session activity** Students complete an assignment in class	**Class Notebook** Pearson authorised assignment brief or brief produced and verified by the school