

Share Multi Academy Trust

Subject: BTEC DIT	Year 10 2023/24	Ability Mixed
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Component 1: Exploring User Interface Design Principles and Project Planning Techniques: **Learning Aim A:** Understand interface design for individuals and organisations **Learning Aim B:** be able to use project planning techniques to plan, design and develop a user interface **Learning Aim C:** be able to review a user interface

Terms	A1: HT1	A2: HT1	A3: HT1	A4: HT2	B1: HT2	B2: HT2	B3: HT3	B4: HT3	C1: HT3
Topic	Component 1: A1 User Interfaces Learning Aim, A: Understand Interface design for individuals and Organisations	Component 1: A2 Audience Needs Learning Aim, A: Understand Interface design for individuals and Organisations	Component 1: A3 Design principles Learning Aim A: Understand Interface design for individuals and Organisations	Component 1: A4 Designing an efficient user interface Learning Aim, A: Understand Interface design for individuals and Organisations	Component 1: B1 Project planning techniques Learning Aim B: Be able to use project planning techniques to plan, design and develop a user interface	Component 1: B2 Creating a project proposal and plan Learning Aim B: Be able to use project planning techniques to plan, design and develop a user interface	Component 1: B3 Creating an initial design Learning Aim B: Be able to use project planning techniques to plan, design and develop a user interface	Component 1: B4 Developing a user interface Learning Aim B: Be able to use project planning techniques to plan, design and develop a user interface	Component 1: C1 Review Learning Aim C: Be able review a user interface
Topic overview Students will learn...	The uses of different types of user interface and how they vary across different uses, devices and purposes.	How to investigate the needs of audiences and how they affect the design of user interfaces.	How design principles provide both appropriate and effective user interaction with hardware devices.	Techniques that can improve the speed and access to user interfaces.	The use of different planning tools and methodologies.	How to create a project proposal and project plan.	How to produce an initial design using design principles.	How to use their design to produce a user interface.	How to review the success of the user interface.
Components	Students define a user interface learn about the software and human features in order to understand the following types of user interface. <ul style="list-style-type: none"> text base speech / natural language GUI/WIMP, sensors, menus and forms. Students describe and explain the different features of these interfaces, their advantages and disadvantages in order to understand when to use each type of user interface. Students recognise and describe a range of uses for	Students will learn what factors affect user interfaces in order to design or adapt their own interface to take into the following into account: <ul style="list-style-type: none"> Accessibility needs including visual, hearing, speech, motor and cognitive Skill level: expert, regular, occasional, novice Demographics: age, beliefs and values, cult and past experiences 	Students will learn the following design principles in order to improve the effectiveness of user interfaces: <ul style="list-style-type: none"> Colours Font style Language Amount of information Layout User perception Retaining user perception Intuitive design <u>Topic 5</u> Students will learn how the use of colour, sound, symbols and visuals	Students will learn the following techniques in order to improve the speed and access to user interfaces: <ul style="list-style-type: none"> Keyboard shortcuts Informative feedback Easy reversal of actions Ensuring buttons and links are distinguishable Emphasising objects to influence selection Place related objects next to each other to 	Students will learn why it is important to plan and what project planning tools are used to in order to plan a user interface including: <ul style="list-style-type: none"> Task lists Written or graphical descriptions Gantt charts diagrams Mood boards Mind maps Students will learn about agile, waterfall and scrum methodologies in order to manage a project.	Students will learn about the contents of a project proposal in order to create their own. This will include: <ul style="list-style-type: none"> Purpose and audience Project requirements User accessibility requirements Constraints Students will also learn about the different techniques to create a project plan in order to create their own. This will include: <ul style="list-style-type: none"> Timescales When tasks will be completed, 	Students create an initial design in order to meet the requirements of the user which will include input and output requirements and user accessibility options. They will also learn to how to allow for the following in order to create a realistic design: <ul style="list-style-type: none"> Increased user confidence and familiarity Reduced learning time of new interfaces / features Reduced time to complete tasks 	Students use the design principles learnt in A3 in order to create their own four screen user interface. Once initial designs have been created, students will test each other's user interfaces to identify: <ul style="list-style-type: none"> How they meet the user requirements Ease of use Use of appropriate design principles The inclusion of different accessibility features 	Students consider the strengths and weaknesses of their user interface and suggest improvements that could be made in order to review the overall success of their user interface against the project requirements.

<p>user interfaces in order to explain how different user interfaces are used on everyday devices and be able to choose the correct interface for different devices.</p> <p>These will include the following:</p> <ul style="list-style-type: none"> • Computers, • Handheld devices, • Entertainment systems, • Domestic appliances, • Controlling devices • Embedded systems. <p><u>Topic 2</u> Students will learn the factors affecting the choice of user interface including</p> <ul style="list-style-type: none"> • Performance / response time, ease of use • User requirements, user experience • Accessibility and storage space <p>This is in order to choose the correct interface for a given situation.</p> <p>Students will learn the hardware and software influences including:</p> <ul style="list-style-type: none"> • Operating systems and platforms, types/size of screen, types of user input • Hardware resources available such as processor and memory • Emerging technologies <p>This is in order to consider the appropriate hardware and software for a given device.</p>		<p>can change user perception.</p> <p>Students will learn how about the following: how to grab user attention, uncluttered screens, labelling items, default user inputs, autofill and tip-text.</p> <p>Students will also learn about intuitive design by using graphics to denote what buttons do, helpful pop-up messages, easy-to-use help features, ensuring consistency and reversal of actions.</p> <p>These are required in order to create a user interface.</p>	<p>reduce user time</p>		<p>including sub tasks</p> <ul style="list-style-type: none"> • Key milestones 	<ul style="list-style-type: none"> • Increased user attention • Reduced need for specialist knowledge. <p>Students will also learn different ways to use design software in order to create their own designs</p>	<p>This is done in order to improve initial designs.</p>	
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<p>What students should already know (Prior learning components)</p>	<p>Students have covered the following at KS3: Understand the hardware and software components that make up a computer system and how they communicate with one another and with other systems It is covered in Year 7: Computer parts and logic gates and Graphics programming and in Year 8: How computer's work and Graphics and Gaming</p>	<p>Students should have covered Component 1: A1, the previous topic, as they need a knowledge of the different types of user interfaces and factors affecting them to explain how accessibility, skills and demographics affect different interfaces.</p>	<p>Students have covered the following in KS3: Undertake creative projects that involve selecting, using and combining multiple applications; Create, re-use, revise and re-purpose digital artifacts for a given purpose with attention to trustworthiness, design and usability. These are covered in Y7 bitmap an, Y8 Posters and Presentation, Y8 Graphics and gaming and Y9 representation of images</p>	<p>Students need to have completed A1, A2 and A3, the previous topics, in order to effectively look at the efficiency of user interfaces and intuitive designs.</p>	<p>Students have covered the following in KS3: 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, re-use, revise and re-purpose digital artifacts for a given purpose with attention to trustworthiness, design and usability. Specifically, they have completed an integrated project: Superpowered in Y7, Graphics and Gaming in Y8 and a Data Science project in Y9, the latter covering the project life cycle which include planning.</p>	<p>Students have covered the following in KS3: 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, re-use, revise and re-purpose digital artifacts for a given purpose with attention to trustworthiness, design and usability. Specifically, they have completed an integrated project: Superpowered in Y7, Graphics and Gaming in Y8 and a Data Science project in Y9, the latter covering the project life cycle which include planning.</p> <p>Students also need to have completed the previous topic on project planning.</p>	<p>Students need to apply the knowledge learnt from Learning A1, A2, A3 and A4 which gives them the background on user interface design and design principles so they can create an initial design that is usable.</p>	<p>Students need the knowledge learnt from Learning A1, A2, A3 and A4 to create a user interface that is effective and efficient.</p> <p>Students will also have covered the following at KS3: Create, re-use, revise and re-purpose digital artifacts for a given purpose with attention to trustworthiness, design and usability. This was covered in Y7 Bitmap and vector images, Y8 Graphics and gaming, Y8 Posters and Presentation and Y9 representation of images.</p>	<p>Student need the knowledge learnt in all previous topics, from A1 through to B3 in order to review the completed user interface.</p> <p>Students have completed a review of a project in the Y9 Data Science unit.</p>
<p>Transferrable knowledge (skills)</p>	<p>Research skills using the Internet and using various filtering methods. Students will also be able to use their understanding of the different user interfaces in everyday life when choosing and using devices.</p>	<p>Be able to consider user accessibility needs and consider how these impact on the ability to use digital devices</p>	<p>Understand general design principles involving colour, fonts, use of white space, layout etc. as well as the use of intuitive designs on digital devices.</p>	<p>More efficient use of digital devices and recognising the use of intuitive designs.</p>	<p>Be able to plan projects and other events effectively using project planning tools and project management methodologies</p>	<p>Be able to plan projects and develop a project proposal for a given purpose.</p>	<p>Creating visualisations such as storyboards and sketches and being able to discuss aims of a design and follow a project proposal and timescale or project plan.</p>	<p>General design principles, use of PowerPoint tools such as navigation, pop ups and linking screens. Use of design software.</p>	<p>Different questioning methods. The ability to discuss drawbacks and positive features of a design.</p> <p>The ability to review projects based on user requirements and how to overcome constraints.</p>

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<p>Key vocabulary pupil will know and learn</p>	<p>User Interfaces, Text-based interfaces, GUIs, WIMP, speech, sensor, menu interfaces, command line interface. Performance, response times, accessibility, storage, operating system, hardware, software, platform, touchscreen, keyboard, mouse, gestures, processing power, memory</p>	<p>Accessibility, visual, speech, hearing, motor, cognitive, novice, expert, occasional user, demographics, culture, beliefs and values, past experience</p>	<p>Dominant colour, sub-dominant colour, accent colours, House style, analogous, complementary, triadic, serif, sans serif, white space, breadcrumbs, icons, drop-down lists, toggles, intuitive design, autofill, tip text, reversal of actions.</p>	<p>Shortcuts, informative feedback, reversal of actions, links, buttons, object placement</p>	<p>Gantt Charts, Mood boards, Mind maps, Waterfall, Agile and Scrum methodologies</p>	<p>Project proposal, timescales, milestones, constraints, risks and contingencies, haptic, visual, audio</p>	<p>Sketches, storyboards, accessibility, software, hardware.</p>	<p>Annotations, hypertext, hyperlinks, navigations, accessibility, intuitive design, animations.</p>	<p>Ease of use, user requirements, audience and purpose, design purposes, project planning methodologies, planning constraints, refinements.</p>
<p>Assessment activities</p>	<p>Formative –verbal assessment through in class questioning and discussion. Recall activities through class discussion and completion of in-class worksheets Completion of homework units designed to apply their knowledge in real-life situations and check understanding. Homework 1 will be given at the completion of Topic 1 and Homework 2 at the end of Topic 2. These will consist of short answer / matching type questions and then on longer exam style question based around the subjects covered in that topic. S:\Computing\BTEC DIT 2022\Comp 1 LAA\Topic 1 – Interface types\ Topic 1 Homework 1 S:\Computing\BTEC DIT 2022\Comp 1 LAA\Topic 2 – Factors\ Topic 2 Homework 2</p>	<p>Formative - as for A1 MS Teams Topic 3 Homework 3</p>	<p>Formative - as for A1 MS Teams Topic 4 Homework 4</p>	<p>Formative - as A1 MS Teams Topic Homework 5</p>	<p>Formative - as for Section A MS Teams Topic 1 Homework 1</p>	<p>Formative - as for Section A MS Teams Topic 2 Homework 1 Summative This assessment will cover Task 1a and 1b in the controlled assessment. Students complete a project proposal and timescale plan.</p>	<p>Formative - as for Section A MS Teams Topic 3 Homework 3</p>	<p>Formative - as for Section A MS Teams Topic 4 Homework 4</p>	<p>Formative - as for Section A MS Teams Reviewing a user interface Topic 1C Homework 1C Summative This assessment will cover tasks 2, 3 and 4. Students will create a user interface based on a design provided for them and then review their completed prototype.</p>

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<p>Resources available</p>	<p>S:\Computing\BTEC DIT 2022\Comp 1 LAA\Topic 1 - User Interfaces</p> <p>S:\Computing\BTEC DIT 2022\Comp 1 LAA\Topic 2 - Factors and influences</p>	<p>S:\Computing\BTEC DIT 2022\Comp 1 LAA\Topic 3 - Audience needs</p>	<p>S:\Computing\BTEC DIT 2022\Comp 1 LAA\Topic 4 - Design principles</p> <p>S:\Computing\BTEC DIT 2022\Comp 1 LAA\Topic 5 - Design psychology</p>	<p>S:\Computing\BTEC DIT 2022\Comp 1 LAA\Topic 6 - Designing an efficient user interface.</p>	<p>S:\Computing\BTEC DIT 2022\Comp 1 LAB and C\Topic 1 - Project Planning Techniques</p>	<p>S:\Computing\BTEC DIT 2022\Comp 1 LAB and C\Topic 2 - creating project plans</p>	<p>S:\Computing\BTEC DIT 2022\Comp 1 LAB and C\ \Topic 3 - Initial designs</p>	<p>S:\Computing\BTEC DIT 2022\Comp 1 LAB and C\Topic 4 - Developing a user interface</p>	<p>S:\Computing\BTEC DIT 2022\Comp 1 LAB and C\Topic 1C- Reviewing a user interface</p>
<p>Notes</p> <p>Why this topic is important...</p>	<p>Before students can design their own user interface, learn about audience needs and how interfaces can be made efficient, they must first know what a user interface is, what the different types are and how these are chosen in terms of hardware and software availability and the requirements of the interface and the users.</p>	<p>This topic now focuses students on what the “audience” will require of a user interface depending on their skills, demographics or accessibility needs. As the students will be required to design an efficient user interface for a given target audience, they must be aware of accessibility, skill level and demographic needs to accomplish this.</p>	<p>Students now need to know design principles and design psychology so they can create their own user interface whilst also accounting for audience needs and the type of interface required.</p>	<p>Evaluating any user interface requires being able to suggest improvements both in the initial design but also to ensure user satisfaction. Knowing how to improve the speed and access to an interface is a fundamental piece of knowledge required to make this evaluation as well as the knowledge from A1, 2 and 3.</p>	<p>Students now have an understanding of the different types of user interface and the design principles used to create effective and efficient user interfaces. They must now learn how to plan for the design and creation of a prototype user interface given a project brief. This cannot be done without understanding the topics covered previously in Learning Aim A and cannot proceed successfully with such project without knowing project planning tools and methodologies.</p>	<p>Now that students understand the project planning techniques in B1, students will need to understand how to create a project proposal and timescale plan and how to identify purpose, audience and user requirements of the project from different scenarios. They will use their knowledge from A2. This needs to be understood and completed before designing a user interface.</p>	<p>Using knowledge from A2, A3 and A4 students create their initial design using the project proposal and plan created in the B2. They have to show that this design meets the user requirements and that they can complete the next task from the completed design. The prototype use interface cannot be created without completion and understanding of this topic.</p>	<p>Applying knowledge from A2, A3 and A4 students create their prototype user interfaces using their design from B3. They will also peer assess and test other student’s Interfaces which will give the students further insight into the process of completing a project and introduce the idea of reviewing work that is introduced in the next unit.</p>	<p>Having completed the user interface, it is now important to review the interface against the user requirements, ease of use, the use of design principles and accessibility features. It is then important to assess what improvements could be made to the interface to better meet the audience needs.</p>