



Number of weeks (between 6&8)	Content of the unit	Assumed prior learning (tested at the beginning of the unit)
8 weeks No. of lessons: 16	Systems & Controls - Steady Hand Game In this project, students will be required to design and make an electronic circuit steady hand game. Students will work with precision, taking into account how the product will be used, who will use it and how it will serve its purpose or function. The final product will have a base containing the circuit, power supply, buzzer and wire on top in a desired shape to meet the needs and purpose.	Generate, develop, model and communicate ideas through discussion and annotated sketches Understand and use electrical systems in their products Select from and use a wide range of materials and components, including construction materials, according to their functional properties and aesthetic qualities Evaluate ideas and final product against the specification and consider the views of others
Assessment points and tasks	Written feedback points	Learning Outcomes (tested at the end and related to subject competences)
MAKING <ul style="list-style-type: none"> Selected and used appropriate tools, materials and/or technologies including, where appropriate, CAM correctly, skillfully and safely Worked independently to produce a rigorous and demanding outcome The outcome has the potential to be commercially viable and is suitable for the target market EVALUATING <ul style="list-style-type: none"> Detailed testing and evaluation as appropriate throughout the designing and making process taking account of client/user or third party opinion Evaluate and justify the need for modifications to the product and consideration given as to how the outcome might need to be modified for commercial production 	Working through the booklets. Feedback and peer assessment will be highlighted at the bottom of the pages. End of Research(lesson 2), Specification(lesson 4), Application (lesson 8), Design (lesson 10), Making (lesson 16), Evaluating (lesson 18)	Aims of the project: <ul style="list-style-type: none"> To enable students to develop their practical and electronic skills To increase awareness of health and safety in a potentially dangerous area To develop knowledge and understanding of materials, tools, machinery and processes. Select and use a range of tools, equipment and processes safely and accurately Analysing data and evaluation of structural defaults in designs To develop knowledge/skills to enable achievement of a high quality finish in practical work

Lesson	Clear learning intentions	Clear success criteria	Hook	Presentation of content	Guided practice	Independent practice (homework)	Closure
1	IDENTIFY <ul style="list-style-type: none"> Understand the project and how it will evolve over the course Knowledge and understanding of systems and control 	All: will identify a scenario and themes for their game Most: will suggest variety of purpose for the game to meet Some: will understand how the components fit together resulting in input, process and output	What is the purpose of this game? Explain how it functions and what components are required for the sound to work or the light to switch on	Introduction to the project. Reflect on the previous project and the design process. What is systems and controls? A look at steady hand game, themes and scenarios. Task to suggest different themes with a given purpose	Students will complete a mind map to determine possible themes for their electronic game Students will discuss the purpose of the game and whom they're designing for. Teacher demonstrates different examples and provides a theme. Could be to raise money for charity	Collect and find information about different charities. You must produce a spider diagram showing at least 8 different charities. Include- Charity name, logo, brief information and contact details	Choose 1 of your themes and explain what you intend to design and make.
2	PRODUCT ANALYSIS Analysing existing products and solutions to inform designing and making	All: will use a software to present their research of charities. Most will include company information and logo Some: will demonstrate a wide range of computer skills with their presentations	In pairs, discuss your logo research. What do you know about this company? Use the internet to gather all the information on the board Charity name, logo, telephone number, address, slogan, details	Instructions on the board to follow for the research. Present examples of detailed spider diagram with useful information, images and links Demo of putting all the information together Workbook page 17-18	Teacher demonstrates the use of chosen software suitable for producing spider diagram. Copy and paste pictures, arrows, shapes, colours.	Design a leaflet for your chosen charity to raise more awareness.	Conclusion - explain which charity you have chosen to raise money for and why Make notes of further information you need to gather for the charity



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3	BRIEF & SPECIFICATION <ul style="list-style-type: none"> Writing a design brief considering the purpose and target audience of the product. Outlining the summary of specification with a MUST, SHOULD and COULD. 	All: will analyse the brief considering the purpose and target audience. Most: will write why the product is needed and how it will be made. Some: will justify their answers and explain how their product will appeal to the target audience.	Look at the steady hand game on the board. Write down the list of requirements (MUST, SHOULD and COULD) that would have been thought of before it was made	PowerPoint presentation Reviewing examples of design brief What is the purpose of the product? Who is your target audience? Why is it needed? How will you make the product? Students will write their specification using the table as a guide.	Write down the purpose of your product, who it is aimed and why it is needed. Write the design brief summary using key points Summary of specification in a <i>list</i> or detailed sentences <i>Differentiation: Sentence starters</i>	Research and draw the symbols for the list of components	Write down the summary of specification list MUST, SHOULD and COULD
4	APPLICATION <ul style="list-style-type: none"> Knowledge and understanding of electronic components, circuit diagrams Input - Process - Output 	All: will be able to identify the 5 components required for the project Most: can provide examples of input, process and output circuits Some: will give a full definition for each component	Match the key definition to the correct picture and symbol Extension: write the definition for 2 of the components	Presentation of different components and close look at the 5 key ones required for the project. Matching symbol exercise on the board (class activity) Examples of circuits using some of the symbols. Task to draw the circuit for the steady hand game	Students develop their knowledge of the different types of components required for the project. Students will draw a circuit diagram of the steady hand game.	Systems and control matching symbols worksheet	Write down the definitions of the INPUT, PROCESS and OUTPUT in the section provided
5-6	DESIGN IDEAS <ul style="list-style-type: none"> Able to generate ideas, develop project proposals and evaluate them Improvement of design ideas (sketching techniques)	All: will produce a range of design ideas (3) with colour Most: will annotate and evaluate their ideas Some: will use feedback from users to develop their ideas	Use the mini white board to draw the wire frame for the steady hand game. Consider the shape of the company logo	Produce a range of design ideas (3) with colours, labels, annotations and evaluations. Differentiation: Use cut out cards, shapes. CAD (2D Techsoft) Workbook page 23-24	Introduce the base design task with guidelines and limitations Students produce 3 base designs and wire shape with annotations and evaluations Students develop their base design on the computer	Produce a display stand to accompany the steady hand game with instructions.	Draw your final wire frame design on page 24 and explain reasoning behind the shape In order to achieve my target, I am going to...
7-13	MAKING <ul style="list-style-type: none"> Knowledge and understanding of the workshop, tools and equipment Health & Safety issues within the workshop (Rules, behavior, safe working practice). Accurately solder and assemble components. Vacuum forming	All: will solder and join the components together. They will design a case to hide the components and bend wire for the shape design Most: will add a vacuum form case over the design Some: will work independently and use the computer for their designs	Gather all the components required along with a plastic sleeve to put your name Use selected tools to bend and shape your wire Open and save the template for the case into your network folder. Open the logo for your charity	Plan the making of the game in stages Step by step instructions for the lessons on the board. Class demonstrations at intervals - - How to solder - Vacuum forming - Designing on Photoshop - Cutting, scoring and folding - Assembling the game parts	Demo how to solder - stress accuracy. Students to carefully solder the components. Demo on vacuum forming. Students to complete their steady hand game. Teacher led activities. Select students demonstrate good practice Teacher provides support during each activity/task	Tools and equipment worksheet Research soldering methods and techniques	What have you learnt today? What went well? What would you do differently next time? Are you on schedule with the plans? Peer and self assessment
14-15	TEST AND EVALUATE <ul style="list-style-type: none"> Develop knowledge and understanding for testing products with set criteria Evaluate the final product and project Understand peer assessment and be able to provide positive feedback. 	All: will evaluate their game and gather feedback from users Most: will suggest improvements to their game based on feedbacks Some: will give detail accounts of their difficulties and what to do to improve	In pairs, test each others game. Give 1 positive feedback and suggest 2 improvements	Testing the games require batteries. Set of instructions on the board to follow. Presentation to include questions that users can ask and possible suggestions for improvements. At least 3 different people to gather feedback from Evaluate using the questions	Testing the steady hand game. Gather feedback from users Students will evaluate their bridge project. They will suggest improvements based on feedback from other members of the class. Questions to support evaluation are page 27	Gather feedback from family members and suggest further improvements based on their comments.	Peer assessment and feedback. Reflections for the project on page 28