



Key Stage 4 Design and Technology Curriculum Maps

Intent of Design and Technology Curriculum at Littleover Community School.

At Littleover Community School, Design and Technology is an inspiring, innovative and practical subject. Using creativity and imagination, students design and make products that solve real and relevant problems within a variety of contexts, considering their own and others’ needs, wants and values. Students learn how to take risks independently and as part of a team, becoming resourceful, innovative, enterprising, and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. The provision of Design and Technology at Littleover Community School aims to ensure that all students access the main strands of RESEARCH, DESIGN, MANUFACTURE, EVALUATION and TECHNICAL KNOWLEDGE through a variety tasks.

One single lesson of core theory/fortnight. Indepth theory is taught within the projects.

S – Substantive - knowledge P – Procedural - what do we need them to know how to do. Sk – Skill –what can they do

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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
	TEXTILES																																						

YEA R 10	Topic – Toiletry bag	Topic – CAD sublimation printing	Topic – Screen printed tote bag	Topic – Sportswear Project	Topic – NEA
	S – - CAD work for ideas. - CAM for embellishment. - Pattern drafting. - Sewing machine skills. - Finishing technique. P –	S – - Print design - Economical pattern placement - Scales of production - Professional presentation techniques - Hemming P –	S – - Wider implications when designing and making - Ergonomic and anthropometric data to support ease of use. - Pattern drafting. - Structural integrity	S - - Design thinking and communication - Material considerations - Manufacturing processes and techniques.	Investigating the Context S – Context, Mind Map, Primary User, Stakeholders, Questionnaire P – Use the initial 3 contexts to fully explore the issues and identify areas for development and a

	• Know how to use Photoshop to generate design ideas. • How to use the computerised sewing machine to create their initials on the bag. • Fabric mapping on their designs. • Create a pattern to cut out fabric. • Set up sewing machine correctly. • Inserting a zip. • Finishing edges using bias binding. Sk – Be able to use a pattern to create a repeat on Photoshop to generate realistic design ideas. Programme the computerised sewing machine to embellish their bags. Develop their skill and confidence in using the sewing machine accurately. Assessment – Work is completed on PowerPoint and uploaded onto Teams. The work is regularly checked here, and feedback	• How designers use past and present influences to generate print ideas. • How to use appropriate and accurate marking out methods • How to efficiently cut out to minimise waste • How processes vary when manufacturing products to different scales of production • How design solutions can be communicated to demonstrate their suitability to a third party • Use of the seam allowance to turn a hem. Sk – • Generate a mood board on past and present designers to define a coherent design concept. • Recall advantages/disadvantages of batch and one-off production. • Produce a final presentation page using Photoshop. • Be able to finish the edge of a textile's product. Assessment – PPT completed on the computer which is teacher assessed and written feedback given. Students given verbal feedback for practical work.	• Traditional and industrial screen printing • How environmental implications are considered within design. • How usability is considered when designing prototypes. • How to create a pattern template with the correct symbols. • Awareness of manufacturing processes used for larger scales of production P – Sk – • Use mathematical data accurately to design and make an ergonomic tote bag. • Recognise how wider implications can have an influence on designing and making. • Use and recognition of the correct pattern symbols. Assessment – PPT completed on the computer which is teacher assessed and written feedback given. Students given verbal feedback for practical work. Grade levels given for key areas of Intent on Go4Schools.	• How design solutions can be communicated to demonstrate their suitability to a third party. • Recognise the main categories of materials available to designers when developing design solutions. • Factors that influence the selection of materials. • Recognise how elastane materials be manipulated and joined. • How designers and manufacturers ensure accuracy when making. P – Sk – • Use graphical techniques to communicate ideas, modifications, constructional and	Primary User for their NEA. Also identify any stakeholders who could also be affected by the project. Sk – Recognising successful potential projects with enough complexity and scope and opportunities to produce a successful prototype for the NEA. Assessment – Work is checked by staff using the O: drive to access the work. Verbal feedback given and progress recorded on Excel sheet using a RAG rating.
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	given at key stages; mood board, design ideas and manufacture.	Grade levels given for key areas of Intent on Go4Schools.		technical considerations. • Understand that products are predominantly made from multiple materials. • Recall the key factors that influence fabric choice. • Develop practical skill using the overlocker. • Use primary user measurements to develop patterns. • Recognise purpose of seam allowances. Assessment – PPT completed on the computer which is teacher assessed and written feedback given. Students given verbal feedback for practical work. Grade levels given for key areas of Intent on Go4Schools.	
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		drawing & 2D flat views Assessment – Feedback in exercise books					and scope and opportunities to produce a successful prototype for the NEA. Assessment – Work is checking by staff using the O: drive to access the work. Verbal feedback given and progress recorded on Excel sheet using a RAG rating.
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	- Understand the different CAM options available in school and how they can be applied to a design - Understand the basics of electronics theory including circuits, ohms law, components and breadboarding. - How to choose relevant materials, tools and equipment that are appropriate for the manufacture of the light.	- How to use a range of hand drawing skills to design a theme park ride or attraction - How to choose relevant materials, tools and equipment that are appropriate for the manufacture of the ride or attraction.	- How to use relevant sketching techniques. - How to work with specific materials, tools and equipment provided that are appropriate for the manufacture of the golf obstacle. - How to use the vacuum former and the materials that can be used. - How to use a NE555 timer in a circuit - How to create a plan of manufacture for their golf obstacle. - How to write a reflective evaluation	- They will be able to demonstrate accurate use of a range of hand tools and machinery relevant to working with metal. - Students will gain knowledge of metal theory, ferrous and non-ferrous metal and alloys, properties and uses.	Assessment – Work is checking by staff using the O: drive to access the work. Verbal feedback given and progress recorded on Excel sheet using a RAG rating. Assessment – Toolbox assessed teacher feedback and marks put into G4S. Theory work checked, and written feedback given.
Sk –	- Be able to investigate and explore a context given and use creativity and knowledge to explore a solution. - Solidworks to create 3D professional design ideas - Circuit wizard to create working circuits and transfer a circuit design to PCB artwork ready to be cut on the router. - Understand how to use CAM machinery and create designs on relevant software.	Sk – - Be able to identify the four types of motion and relate real life products to them. - Build real life models of mechanisms using Lego Technic kits in teams. - Build real life models of linkages in teams to understand how to apply to a design problem. - Students will know how to solve mechanical advantage and gear ratio problems, - Will know how to apply and choose a relevant drawing technique to present design ideas. - Knowledge of use of appropriate tools, machinery, and materials for practical manufacture of ride/attraction. Assessment – Mechanisms work completed in students' books and teacher assessed with	Sk – Apply iterative design and create successful models and prototypes.		

	• Develop knowledge of electronics. • Knowledge of use of appropriate tools, machinery, and materials for practical manufacture of light. Assessment – PPT completed on the computer which is teacher assessed and written feedback given. Students given verbal feedback for practical work.	written feedback. Lego technic models and ride/attraction marked through verbal feedback.	• Be able to complete detailed existing product research • Be able to independently select materials and use the vacuum former. • Understand more complex circuits • Write a detailed plan and evaluation relating to a project. • Assessment – PPT completed on the computer which is teacher assessed and written feedback given. Students given verbal feedback for practical work.		
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	Sk – • Know the criteria to examine an existing product made from timber • Know how to use graphical techniques, including 2D CAD software to present and develop designs. • Know how to work out a cutting list • Know the stages of manufacture for a product and the how to make a quality outcome. • How to test and evaluate a product. • Be able to investigate and explore a context given and use creativity and knowledge to explore a solution. • Be able to recognise why different timbers are selected and identify how products are constructed. • Use tools and machinery to produce a range of accurate wood joints • Recognise other factors that influence the design of products to write a detailed product analysis. • Use isometric drawing skills to produce a varied range of ideas that consider materials and construction methods. • Use skills in techsoft 2D design to present and develop design ideas to produce a realistic final design. • From the student's individual final design, work out an accurate cutting list to order materials to the correct size. • Create a production plan to follow in order to manufacture a high-quality outcome.	• Students will be able to recognise how curved timber products have been manufactured. • To recognise ergonomic features in a product and to be able to consider ergonomics when designing. • To use 2D and 3D sketching techniques to produce a range of initial ideas. • To employ CAD modelling skills to develop and model creative seating designs in SolidWorks. • To make well-constructed 3D models that will enable the iterative design process to develop a successful seating design. Assessment – PPT completed on the computer which is teacher assessed and written feedback given.	machinery relevant to working with metal. • Students will gain knowledge of metal theory, ferrous and non-ferrous metal and alloys, properties and uses. Assessment – Toolbox assessed teacher feedback and marks put into G4S. Theory work checked, and written feedback given.	access the work. Verbal feedback given and progress recorded on Excel sheet using a RAG rating.
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	Write a detailed and reflective evaluation that considers further development of the product. 													
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	how it relates to their project and will influence their NEA. Assessment – Work is checking by staff using the O: drive to access the work. Verbal feedback given and progress recorded on Excel sheet using a RAG rating.	REMINDER – all must use CAD/CAM somewhere in development. Sk – Understanding that a wide range of ideas are required for the NEA and not to be fixated on one design. Feedback from the Primary User will help selection/rejection process to show clear iterative development with decisions fully annotated. Assessment – Work is checking by staff using the O: drive to access the work. Verbal feedback given and progress recorded on Excel sheet using a RAG rating.	be used by the technician to order and prepare materials for the next stage. Sk – Understanding that the Technical Specification will be used by a third party to order and cut materials and mistakes will cause delays to the manufacture. Assessment – Work is checking by staff using the O: drive to access the work. Verbal feedback given and progress recorded on Excel sheet using a RAG rating.	e of hand tools, machinery, digital design and digital manufacture Assessment – Work is checking by staff using the O: drive to access the work. Verbal feedback given and progress recorded on Excel sheet using a RAG rating.	real time analysis and testing of the final prototype against the technical and stakeholder requirements. They need to use suitable and effective methods of testing and how to identify weaknesses and strengths of their final product. Sk –Analyse and evaluate data, analyse, and test the final product and effectively identify strengths and weaknesses to be then able to suggest modifications and further iterations to improve their design. Assessment – Work is checking by staff using the O: drive to access the work. Verbal feedback given and progress recorded on Excel sheet using a RAG rating.		
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