



Kings Langley School

Unlocking Potential for Life

D&T:

Graphics, Product Design

Resistant Materials, and Textiles.

Programme of Study

And

Teacher Guide

Learning Area Leader Miss C Scanlan

Second in Dept and Subject leader Mr J Housego



Content

What is D&T?

Intent

Implementation

Impact

Overview of D&T

Long term plan for year 10

Long term plan for year 11

Medium term plan for year 10

Medium term plan for year 11

Short term plan for year 10

Short term plan for year 11

I can statements Student knowledge and skills tracker for year 10 Theory

I can statements Student knowledge and skills tracker for year 10 Area practical

I can statements Student knowledge and skills tracker for year 11 NEA



“Enjoy failure and learn from it. You never learn from success.”

James Dyson.

Year 10 Graphics “The best way to predict the future is to create it.” **Peter Drucker**

Year 10 Resistant Materials “Enjoy failure and learn from it. You never learn from success.” **James Dyson**

Year 10 Textiles “Fashion is very important it is life enhancing and like anything that gives you pleasure it is worth doing well” **Vivienne Westwood**

Year 11 Graphics “The best way to predict the future is to create it.” Peter Drucker

Year 11 Resistant Materials “Enjoy failure and learn from it. You never learn from success.” James Dyson.

Year 11 Textiles “Fashion is very important it is life enhancing and like anything that gives you pleasure it is worth doing well” Vivienne Westwood

What is D&T?

Design and Technology is all around us in our modern world. Learning about design and technology helps our students understand the world in which they are living and actively engage in it. It helps them know where we've been and develop where we are going.

The Design and Technology curriculum at Kings Langley School consists of a range of creative, imaginative and innovative experiences of designing and practical based activities using a range of materials from four main areas: Graphics, Resistant materials, Textiles and Food in conjunction with drawing on additional knowledge from other STEM subjects and links to other curriculum areas such as Geography and Art.

The curriculum is designed to give all students the opportunity to learn the skills and knowledge to engage positively with materials, components, products, and technologies in the world around them. Through these types of activities students are actively contributing to the creativity, culture, wealth and well-being of themselves and their community.

At KLS our experienced and passionate Design and Technology staff provide a safe environment in which students can be innovative, take risks, become more resourceful, be enterprising and develop as capable learners being able to learn a range of new skills and to learn if they fail, turning failure into success. We aim to strive to provide our students with the strength of character to know that they can learn from their mistakes and create a better product in the future through practising and developing the skills and knowledge that they are experiencing across the material areas. We also aim to demonstrate our own love of learning and our passion for our subject to our students by demonstrating to students that we as staff continue to keep ourselves up to date with our knowledge, training and reading, and by supporting colleagues and other subjects with our skills across the school for other events such as set design, costume making for drama, logo designs for signage in school, fund raising using our laser technology and sewing scrubs for the NHS.

Design and Technology education makes a unique and valuable contribution to the education and preparation for students' future life for every child for work and or leisure. We at KLS aim to ensure that our students achieve the best possible experience in Design and Technology to become lifelong learners sharing the same joy of the subject that their teachers have.

Intent

The aims of the Design and Technology department are to prepare students with the skills and knowledge for the world outside the classroom to enable them to experience life to the full both in the world of work and leisure for their future.

The curriculum is designed to be progressive so that students can build on the skills and knowledge they learn and master these skills.

The curriculum aims to give all students of whatever ability the opportunity to master these skills and knowledge through a perseverance stickability approach.

- To develop creative innovative thinkers
- To enable students to feel safe and confident in their learning environment to take risks and learn from mistakes.
- To foster intellectual inquisitiveness about how and why things work the way they do.
- To understand the history of design and technology developments, to appreciate and respect the past, immerse themselves in the present and design for the future.
- To support the development of good health and well-being of our students through the studying of nutrition and cookery.
- To have a greater understanding of how the real world of design and technology works around them, looking back at the past, seeing the present and looking forward to the future.
- To enjoy learning in a practical manner having experienced the best possible engaging and challenging lessons which foster and promote interests for later life.
- To encourage and inspire students to wish to take on further study from selecting it as an option at GCSE, then onto A level and beyond onto university and the world of work.
- To equip students with the knowledge and skills to go on into adult life both at work and leisure with a sound understanding of practical applications to enhance their lifestyles and the joy of learning.

Implementation

At key Stage 3 all students study Design and Technology on a rotation system. In year 7 students complete a 9 week rotation of product Design textiles Food and Computer Science. In years 8 and 9 They will study 9 weeks in each of the four areas of Food, Graphics, Resistant Materials and Textiles The focus of each area is predominantly on practical work, teaching students the practical skills they need to be able to produce a wide range of products. In addition to the practical skills students are taught key knowledge and skills, strong links are made to other STEM subjects. Numeracy and literacy play a key part in the delivery of the Design and Technology curriculum. The schools character programme, SMCE and Health and safety are embedded across the whole of the KS3 curriculum. In each year there is a wide range of materials and equipment used and the scheme of work is progressive so that students are then stretched and challenged with the skills they learnt in the previous year in addition to learning more advanced skills and techniques in the current year.

The Scheme of learning progresses from making items for themselves onto making items for others and then specific clients and groups in society.

Impact

We have healthy numbers of students opting to continue their journey in D&T at both KS4 and KS5 level.



Overview of D&T curriculum

	1	2	3	4	5	6
<p>YEAR 10 AQA GCSE Design and Technology (8552)</p> <p>Students study in a material area of Graphics, Resistant Materials and Textiles however they are examined in all 3 areas. Students receive 6 lessons over a fortnight as 3 doubles For specific content depth of detail please see the Specification available at https://filestore.aqa.org.uk/resources/design-and-technology/specifications/AQA-8552-SP-2017.PDF</p>	<p>Introduction and explanation of the course</p> <p>Practical lessons focusing on Specialist Technical principles 3.2 selection of materials or components • sources and origins • using and working with materials • stock forms, types and sizes • specialist techniques and processes • surface treatments and finishes. Taught through key practical skills and techniques. Mini make projects using a range of specialist equipment and tools in students selected area (Graphics/RM or Textiles)</p> <p>Theory lessons focussing on on ;-Core technical principals 3.1 new and emerging technologies • energy generation and storage • developments in new materials • systems approach to designing • mechanical devices • materials and their working properties</p> <p>Area. Practical's Graphics</p>	<p>Practical lessons focusing on Specialist Technical principles 3.2 selection of materials or components • sources and origins • using and working with materials • stock forms, types and sizes • specialist techniques and processes • surface treatments and finishes. Taught through key practical skills and techniques. Mini make projects using a range of specialist</p>	<p>Practical lessons focusing on Specialist Technical principles 3.2 selection of materials or components • sources and origins • using and working with materials • stock forms, types and sizes • specialist techniques and processes • surface treatments and finishes. Taught through key practical skills and techniques. Main make projects using a range of materials and components</p> <p>Theory lessons focussing on on</p>	<p>Practical lessons focussed on Designing and making principles 3.3 Using investigation, primary and secondary data • environmental, social and economic challenge • the work of others • communication of design ideas • prototype development • selection of materials and components • tolerances • material management • specialist tools and equipment • specialist</p>	<p>Pre NEA planning Mini NEA project</p> <p>Students given a contextual challenge and walked through the main aspects of the NEA iterative process Theory and practical activity Core technical principals • systems approach to designing •</p> <p>Designing and making principles 3.3</p>	<p>1st June NEA Tasks set by the exam board Section A Identifying and investigating 10 marks By analysing the contextual challenge students will identify design possibilities, investigate client needs and wants and factors including economic and social challenges. Students should also use the work of others (past and/or present) to help them form ideas. Research should be concise and relate to their contextual challenge.</p>

	<p>Sketching skills Rendering, orthographic, perspective, Cutting skills Screen printing</p> <p>Resistant materials Skills stick: Sawing, bending, drilling, sanding</p> <p>Textiles-Fashion sketching Cutting out/ lay planning Plain seams, buttons and zip fastenings Textiles practical's- zip case Batik glasses case Simple fabric manipulation task</p>	<p>equipment and tools in students selected area (Graphics/RM or Textiles)</p> <p>Theory lessons focussing on Specialist Technical principles 3.2 selection of materials or components • forces and stresses • ecological and social footprint • sources and origins • using and working with materials • stock forms, types and sizes • scales of production • specialist techniques and processes • surface treatments and finishes</p>	<p>Core technical principals of the other material areas So if studying Textiles focus on Graphics and Resistant materials</p> <p>Area. Practical's Graphics Automata models Packaging nets</p> <p>Resistant Materials 3D printing project: CAD Skills: Google SketchUp, Fusion CAM skills</p> <p>Textiles practical's E Textiles item Free hand sewing embroidery</p>	<p>techniques and processes</p> <p>Revision for year 10 mock examination Core technical principles Specialist technical principles Designing and making principles</p> <p>Area. Practical's Graphics- New homes shipping Containers project</p> <p>Resistant materials CAD: Laser cutter project Tech design 2D CAM: Laser cutter</p>	<p>investigation, primary and secondary data</p> <ul style="list-style-type: none"> environmental, social and economic challenge the work of others design strategies communication of design ideas prototype development selection of materials and components tolerances material management specialist tools and equipment specialist techniques and processes <p>Area. Practical's Graphics-Festivals project-</p>	<p>Students are also advised to use a range of research techniques (primary/secondary) in order to draw accurate conclusions. Students should be encouraged to investigate throughout their project to help inform decisions</p> <p>Section B: Producing a design brief and specification (10 marks) Based on conclusions from their investigation's students will outline design possibilities by producing a design brief and design specification. Students should review both throughout the project.</p>
--	--	--	---	---	---	--

		<p>Area. Practical's Graphics Paper folding Greeting card making Advent calendar</p> <p>Resistant materials Toy project: Analysing project, designing different ideas evaluating</p> <p>Textiles practical's Bag Shorts/ fashion item- commercial pattern</p>		<p>Textiles- Recycling project</p>	<p>teenage lifestyles</p> <p>Resistant materials- Toothbrush project Ergonomics Modelling</p> <p>Textiles- Nature and the environment inspired project</p>	
<p>YEAR 11 AQA GCSE Design and Technology (8552)</p> <p>Students study in a material area of Graphics, Resistant Materials and Textiles however</p>	<p>NEA Section B Design Brief and specification</p> <p>Section C Generating Ideas</p>	<p>NEA Section D Developing design ideas</p> <p>Revision for mock examination</p>	<p>NEA Section E Realising design ideas</p>	<p>NEA Section F Analyse and evaluation</p> <p>Revision for final examination</p>	<p>Final Examination</p>	

<p>they are examined in all 3 areas. Students receive 6 lessons over a fortnight as 3 doubles</p> <p>For specific content depth of detail please see the Specification available at https://filestore.aqa.org.uk/resources/design-and-technology/specifications/AQA-8552-SP-2017.PDF</p>						
---	--	--	--	--	--	--

Rationale

We are continually striving to implement the latest technology into the curriculum as well as building a sound knowledge base through practical experiences.



Long Term Plan For Year 10 – Graphics, RM and Textiles

Practical lessons	1	2	3	4	5	6
YEAR 10 Graphics	Skills development HOU – Basic skills and techniques.	Skills development HOU – Container living.	Skills development HOU – Music festival project and kids transport themed mechanical wooden toy.	Skills development HOU – Product Design challenge. Block modelling.	Start of NEA – Research and investigation.	NEA – Design specification and Initial Design ideas.
YEAR 10 Resistant Materials	Skills development BRE – Skills stick	Skills development BRE – Toy project	Skills development BRE- Container living	Skills development BRE- ergonomic project	Start of NEA – Research and investigation.	NEA – Design specification and Initial Design ideas.
YEAR 10 Textiles	Practical sewing machine and construction skills Range of mini making projects	Practical Technical Construction skills	Practical Decoration Skills	Pattern construction project	Ideas Graphical presentation skills, mixed media- Paint, watercolours, pencils, collage, clay, graphic pens, photoshop	NEA

THEORY lessons All areas use single theory lessons to cover the same material/lessons	1	2	3	4	5	6
YEAR 10 Graphics	Unit 1 New and Emerging technologies	Unit 2 Energy materials systems and devises	Unit 3 and 5 Materials	Unit 7 Making principles	Unit 6 Designing principles	NEA
YEAR 10 Resistant Materials						NEA
YEAR 10 Textiles						NEA

Rationale

For year 10 progression

Students learn a range of practical construction and decorative techniques through a series of mini design and make projects giving the skills and confidence to build up to completing the NEA

Students learn a range of theory topics throughout the year to ensure that the specification is covered and prepare them for the written examination

Aims and learning outcomes

Courses based on this specification must encourage students to:

- demonstrate their understanding that all design and technological activity takes place within contexts that influence the outcomes of design practice
- develop realistic design proposals as a result of the exploration of design opportunities and users' needs, wants and values
- use imagination, experimentation and combine ideas when designing
- develop the skills to critique and refine their own ideas whilst designing and making
- communicate their design ideas and decisions using different media and techniques, as appropriate for different audiences at key points in their designing
- develop decision making skills, including the planning and organisation of time and resources when managing their own project work
- develop a broad knowledge of materials, components and technologies and practical skills to develop high quality, imaginative and functional prototypes
- be ambitious and open to explore and take design risks in order to stretch the development of design proposals, avoiding clichéd or stereotypical responses
- consider the costs, commercial viability and marketing of products
- demonstrate safe working practices in design and technology

- use key design and technology terminology including those related to: designing, innovation and communication; materials and technologies; making, manufacture and production; critiquing, values and ethics.

Long Term Plan For Year 11 – Graphics, Resistant Materials and Textiles

	1	2	3	4	5	6
YEAR 11 Graphics Resistant Materials Product Design and Textiles	NEA Section A and B	NEA Section C and D	Section E and F	Revision	Revision	Final Examination

Rationale

For year 11 progression

Our GCSE exams in Design and Technology include questions that allow students to demonstrate their ability to:

- recall information
- draw together information from different areas of the specification
- apply their knowledge and understanding in practical and theoretical contexts.

Aims and learning outcomes

Courses based on this specification must encourage students to:

- demonstrate their understanding that all design and technological activity takes place within contexts that influence the outcomes of design practice
- develop realistic design proposals as a result of the exploration of design opportunities and users' needs, wants and values
- use imagination, experimentation and combine ideas when designing
- develop the skills to critique and refine their own ideas whilst designing and making
- communicate their design ideas and decisions using different media and techniques, as appropriate for different audiences at key points in their designing
- develop decision making skills, including the planning and organisation of time and resources when managing their own project work
- develop a broad knowledge of materials, components and technologies and practical skills to develop high quality, imaginative and functional prototypes

- be ambitious and open to explore and take design risks in order to stretch the development of design proposals, avoiding clichéd or stereotypical responses
- consider the costs, commercial viability and marketing of products
- demonstrate safe working practices in design and technology
- Use key design and technology terminology including those related to: designing, innovation and communication; materials and technologies; making, manufacture and production; critiquing, values and ethics.

Assessment objectives

Assessment objectives (AOs) are set by Ofqual and are the same across all GCSE Design and Technology specifications and all exam boards.

The exams and non-exam assessment will measure how students have achieved the following assessment objectives.

- AO1: Identify, investigate and outline design possibilities to address needs and wants.
- AO2: Design and make prototypes that are fit for purpose.
- AO3: Analyse and evaluate:
 - design decisions and outcomes, including for prototypes made by themselves and others
 - Wider issues in design and technology.
- AO4: Demonstrate and apply knowledge and understanding of:
 - technical principles
 - Designing and making principles.



Medium Term Plan for Year 10 DT - Theory

Phase 1: New and Emerging Technologies		Length of phase: 1 term – 1 double lesson a fortnight 6 lessons in total
Required pre-knowledge <ul style="list-style-type: none">• KS3 information Students may have had some exposure to simple concepts during KS3 Science or Design and Technology lessons but no prior knowledge is necessary	Learning intentions (knowledge) <ul style="list-style-type: none">• Explain the impact of new and emerging technologies on tools and equipment• Explain how robotics have affected the workplace• Describe co-operative and fair trade organisations• Understand that new technologies need to be developed and produced in a sustainable way• Be aware of the impact that excessive use of certain resources has on the environment• Understand how technology push and market pull affect consumer choice and employment• Describe how changes in fashion and trends affect designers and manufacturers• Understand contemporary and potential future use of automation, Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM)• Understand how products can be designed to be repaired and recycled• Demonstrate how computers and automation have changed manufacturing through the use of robotics• Explain how the design of the workplace has been affected by changes in technology• Describe how workplace layout affects throughput• Understand how the environment can be protected by responsible design and manufacturing• Understand how waste can be disposed of with the least impact on the planet• Understand the positive and negative impacts new products have on the environment• Identify changes in job roles due to the emergence of new ways of working• Be aware of ethical and environmental concerns when designing with new technologies	Leading to <ul style="list-style-type: none">• <i>Applying knowledge to specific industries in each material area</i>• <i>Unit 2 energy</i>

	<ul style="list-style-type: none"> • Demonstrate how innovation can drive product development and enterprise including the use of crowd funding and virtual marketing • Understand how new products can have both a positive and negative impact on society • Be able to recognise and characterise the use of Flexible Manufacturing Systems (FMS) • Understand how Just In Time (JIT) and Lean Manufacturing contribute to manufacturing efficiencies • Be able to evaluate the advantages and disadvantages of planned obsolescence from different perspectives 	
Required pre-skills <ul style="list-style-type: none"> • None 	Learning intentions (skills) <ul style="list-style-type: none"> • Answering exam questions 	
Misconceptions <ul style="list-style-type: none"> • All enterprises are ethical • All types of energy are sustainable • All products can be repaired 		Key questions <ul style="list-style-type: none"> • Which inventions do you feel have significantly changed the way we live our lives? • Which technological developments in agriculture have led to fewer people being needed to work the land to produce food? • How might automation have affected the hierarchical structure of an organisations staff? • Despite the advances in computer aided design, why is the ability to sketch designs on paper still considered so important by many designers? • List the positive and negative effects that fully automated robotic production lines have had on employment. • Which low-cost methods of self-promotion and advertising could young designers use to get their ideas noticed?
Key Resources <ul style="list-style-type: none"> • PPTS • Key work sheets • Homework • Answer sheets • Assessment examination paper 	Key vocabulary <ul style="list-style-type: none"> • Inventions • JIT • CAD CAM • Automation • Sustainability 	Link to <ul style="list-style-type: none"> • Careers • Maths • ICT • Geography- sustainability and energy

<ul style="list-style-type: none"> • Lesson plans 	<ul style="list-style-type: none"> • Enterprise 	
Additional notes: See ppts		

Medium Term Plan for Year 10 Graphics

Gives an overview of the year broken down into phases

Phase 1: Paper Engineering and key drawing techniques		Length of phase: 9 Weeks
Required pre-knowledge <ul style="list-style-type: none"> • Core knowledge of the properties of paper and pencil from year 9. 	Learning intentions (knowledge)	Leading to <ul style="list-style-type: none"> • <i>Once all students have completed the introduction they should have a core set of skills which can be applied to future project work. This should include a wide range of sketching techniques and modelling methods.</i>
Required pre-skills <ul style="list-style-type: none"> • Core understanding of drawing techniques introduced to all DT students across KS3 rotations. • 	Learning intentions (skills) Sketching skills Rendering, orthographic, perspective, Cutting skills Screen printing	
Misconceptions <ul style="list-style-type: none"> • D&T is about practical's and making things • 		Key questions <ul style="list-style-type: none"> • Why are we starting off from the beginning? • Why is presentation important? • Why is rendering important? • What is rendering? • What is freehand sketching? • How do you know where the shadow is cast? •
Key Resources <ul style="list-style-type: none"> • Paper • Card • Scissors • Craft knives and safety mats/rulers • Colouring pencils 	Key vocabulary <ul style="list-style-type: none"> • Rendering • Freehand sketching • Observational drawing • Shadow • Two and three dimensional 	Link to <ul style="list-style-type: none"> • <i>Character, British values, SMSC</i> • <i>Literacy, numeracy</i> • <i>Other curriculum areas</i> • <i>Careers</i>

<ul style="list-style-type: none"> • Water colours • HB pencils • Biro 	<ul style="list-style-type: none"> • Tone • Orthographic drawing • Isometric drawing • Perspective (drawing) 	
<p>Additional notes:</p> <p>Recommended reading</p> <p>Recommended Internet websites TV and U-tube clips</p> <p>http://www.technologystudent.com/</p> <p>https://www.bbc.co.uk/bitesize</p> <p>Recommended places of interest to visit</p> <ul style="list-style-type: none"> • <i>Teaching notes – i.e. standard methods</i> • 		

Medium Term Plan for Year 10 Graphics

Gives an overview of the year broken down into phases

Phase 2: Container Living		Length of phase: 9 Weeks
<p>Required pre-knowledge</p> <ul style="list-style-type: none"> • The cost of living is on the increase and the space for new builds is limited in cities. 	<p>Learning intentions (knowledge)</p> <p>How to use 2D Design How to use Google SketchUp How to turn 2D into 3D Understanding the working properties of different materials</p>	<p>Leading to</p> <ul style="list-style-type: none"> • <i>Architectural design is a route that students could take to solve the NEA.</i>

Required pre-skills <ul style="list-style-type: none"> • Core practical skills • H&S basics 	Learning intentions (skills) How to create a scaled model (links to maths)	
Misconceptions <ul style="list-style-type: none"> • Container living is for poor people • Painting cardboard and foam board looks good 	Key questions <ul style="list-style-type: none"> • Why do we need to think about our impact on the environment? • 	
Key Resources <ul style="list-style-type: none"> • Shoe box to represent the shipping container. • Cardboard • Corrugated card • Foam board • Styrofoam • Paint • Glue guns and sticks • Laptop and printer • Lolly pop sticks 	Key vocabulary <ul style="list-style-type: none"> • Architecture • Interior design • Exterior design • Sustainability • Sustainable living • Global warming • 	Link to <ul style="list-style-type: none"> • <i>Character, British values, SMSC</i> • <i>Literacy, numeracy</i> • <i>Other curriculum areas</i> • <i>Careers</i>
Additional notes: Recommended reading Recommended Internet websites TV and U-tube clips Grand Designs George Clarks Amazing Spaces Recommended places of interest to visit <ul style="list-style-type: none"> • <i>Teaching notes – i.e. standard methods</i> • 		

Phase 3: Music Festival		Length of phase: 9 Weeks
Required pre-knowledge <ul style="list-style-type: none"> • The importance of a logo. • What makes an effective logo 	Learning intentions (knowledge) How to brand, design and promote an event	Leading to <ul style="list-style-type: none"> • <i>Advertising and promoting an event could be a route that students take to solve their NEA.</i>
Required pre-skills <ul style="list-style-type: none"> • Key skills in Google SketchUp covered in KS3 • Basic modelling techniques 	Learning intentions (skills) Adobe Illustrator Adobe Photoshop Advertising Promotion More advanced model making techniques	
Misconceptions <ul style="list-style-type: none"> • D&T is always practical • Practical is always making things 		Key questions <ul style="list-style-type: none"> • What is branding? • What makes a successful logo? • What do you need in order to organise and host an event •
Key Resources <ul style="list-style-type: none"> • Base board • Cardboard • Corrugated card • Foam board • Styrofoam • Paint • Glue guns and sticks • Laptop and printer 	Key vocabulary <ul style="list-style-type: none"> • Brand • Logo • Stage • Advertising • Promotion • Security • SketchUp • Prototype • Photoshop • 	Link to <ul style="list-style-type: none"> • <i>Character, British values, SMSC</i> • <i>Literacy, numeracy</i> • <i>Other curriculum areas</i> • <i>Careers</i>
Additional notes: Recommended reading		

Recommended Internet websites TV and U-tube clips

Recommended places of interest to visit

**Glastonbury
Reading Festival
Isle of Wight Festival**

- *Teaching notes – i.e. standard methods*
-

Medium Term Plan for Year 10 Rstant Materials

Gives an overview of the year broken down into phases

Phase 1: Skills stick		Length of phase: 9 Weeks	
Required pre-knowledge <ul style="list-style-type: none">•	Learning intentions (knowledge)		Leading to
Required pre-skills <ul style="list-style-type: none">••	Learning intentions (skills)		
Misconceptions <ul style="list-style-type: none">•		Key questions <ul style="list-style-type: none">••	
Key Resources	Key vocabulary <ul style="list-style-type: none">•		Link to <ul style="list-style-type: none">• <i>Character, British values, SMSC</i>• <i>Literacy, numeracy</i>• <i>Other curriculum areas</i>• <i>Careers</i>
Additional notes:			

Recommended reading

Recommended Internet websites TV and U-tube clips

Recommended places of interest to visit

- *Teaching notes – i.e. standard methods*
-

Phase 2:		Length of phase: 9 Weeks	
Required pre-knowledge <ul style="list-style-type: none">•	Learning intentions (knowledge)	Leading to	
Required pre-skills <ul style="list-style-type: none">••	Learning intentions (skills)		
Misconceptions <ul style="list-style-type: none">•		Key questions <ul style="list-style-type: none">••	
Key Resources	Key vocabulary <ul style="list-style-type: none">•	Link to <ul style="list-style-type: none">• <i>Character, British values, SMSC</i>• <i>Literacy, numeracy</i>• <i>Other curriculum areas</i>• <i>Careers</i>	
Additional notes:			
Recommended reading			

<p>Recommended Internet websites TV and U-tube clips</p> <p>Recommended places of interest to visit</p> <ul style="list-style-type: none"> • <i>Teaching notes – i.e. standard methods</i> •
--

Phase 3:		Length of phase: 9 Weeks
Required pre-knowledge <ul style="list-style-type: none"> • 	Learning intentions (knowledge)	Leading to
Required pre-skills <ul style="list-style-type: none"> • • 	Learning intentions (skills)	
Misconceptions <ul style="list-style-type: none"> • 	Key questions <ul style="list-style-type: none"> • • 	
Key Resources	Key vocabulary <ul style="list-style-type: none"> • 	Link to <ul style="list-style-type: none"> • <i>Character, British values, SMSC</i> • <i>Literacy, numeracy</i> • <i>Other curriculum areas</i> • <i>Careers</i>
Additional notes:		
Recommended reading		
Recommended Internet websites TV and U-tube clips		

Recommended places of interest to visit

- *Teaching notes – i.e. standard methods*
-

Medium Term Plan for Year 11 DT Theory

Gives an overview of the year broken down into phases

Phase 1: New and Emerging Technologies		Length of phase: 1 term – 1 double lesson a fortnight 6 lessons in total
Required pre-knowledge <ul style="list-style-type: none">• KS3 information Students may have had some exposure to simple concepts during KS3 Science or Design and Technology lessons but no prior knowledge is necessary	Learning intentions (knowledge) <ul style="list-style-type: none">• Explain the impact of new and emerging technologies on tools and equipment• Explain how robotics have affected the workplace• Describe co-operative and fair trade organisations• Understand that new technologies need to be developed and produced in a sustainable way• Be aware of the impact that excessive use of certain resources has on the environment• Understand how technology push and market pull affect consumer choice and employment• Describe how changes in fashion and trends affect designers and manufacturers• Understand contemporary and potential future use of automation, Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM)• Understand how products can be designed to be repaired and recycled• Demonstrate how computers and automation have changed manufacturing through the use of robotics• Explain how the design of the workplace has been affected by changes in technology• Describe how workplace layout affects throughput	Leading to <ul style="list-style-type: none">• <i>Applying knowledge to specific industries in each material area</i>• <i>Unit 2 energy</i>

	<ul style="list-style-type: none"> • Understand how the environment can be protected by responsible design and manufacturing • Understand how waste can be disposed of with the least impact on the planet • Understand the positive and negative impacts new products have on the environment • Identify changes in job roles due to the emergence of new ways of working • Be aware of ethical and environmental concerns when designing with new technologies • Demonstrate how innovation can drive product development and enterprise including the use of crowd funding and virtual marketing • Understand how new products can have both a positive and negative impact on society • Be able to recognise and characterise the use of Flexible Manufacturing Systems (FMS) • Understand how Just In Time (JIT) and Lean Manufacturing contribute to manufacturing efficiencies • Be able to evaluate the advantages and disadvantages of planned obsolescence from different perspectives 	
Required pre-skills <ul style="list-style-type: none"> • None 	Learning intentions (skills) <ul style="list-style-type: none"> • Answering exam questions 	
Misconceptions <ul style="list-style-type: none"> • All enterprises are ethical • All types of energy are sustainable • All products can be repaired 	Key questions <ul style="list-style-type: none"> • Which inventions do you feel have significantly changed the way we live our lives? • Which technological developments in agriculture have led to fewer people being needed to work the land to produce food? • How might automation have affected the hierarchical structure of an organisations staff? • Despite the advances in computer aided design, why is the ability to sketch designs on paper still considered so important by many designers? • List the positive and negative effects that fully automated robotic production lines have had on employment. 	

		<ul style="list-style-type: none"> Which low-cost methods of self-promotion and advertising could young designers use to get their ideas noticed?
Key Resources <ul style="list-style-type: none"> PPTS Key work sheets Homework Answer sheets Assessment examination paper Lesson plans 	Key vocabulary <ul style="list-style-type: none"> Inventions JIT CAD CAM Automation Sustainability Enterprise 	Link to <ul style="list-style-type: none"> Careers Maths ICT Geography- sustainability and energy
Additional notes:		

Medium Term Plan for Year 11 Graphics, Textiles and RM

This would be the NEA plan that SCA has put together for D&T NEA

Phase 1: NEA		Length of phase: 40 Weeks	
Required pre-knowledge <ul style="list-style-type: none"> Students will have undertaken a range of skills based projects during KS3 and year 10 to help prepare them for the NEA. 	Learning intentions (knowledge) <ul style="list-style-type: none"> AO1: Identify, investigate and outline design possibilities to address needs and wants. • AO2: Design and make prototypes that are fit for purpose. • AO3: Analyse and evaluate: <ul style="list-style-type: none"> design decisions and outcomes, including for prototypes made by themselves and others wider issues in design and technology. • AO4: Demonstrate and apply knowledge and understanding of: <ul style="list-style-type: none"> technical principles designing and making principles. 	Leading to <ul style="list-style-type: none"> <i>Students continuing their studies in D&T onto either A-Level Product Design or A-Level Textiles</i> 	
Required pre-skills	Learning intentions (skills)		

<ul style="list-style-type: none"> Students will have undertaken a range of skills based projects during KS3 and year 10 to help prepare them for the NEA. 	<ul style="list-style-type: none"> Identification Research Designing Making Testing and evaluation 	
<p>Misconceptions</p> <ul style="list-style-type: none"> The NEA is all practical! only 20% of the NEA is the final make with smaller practical elements in design phases. 	<p>Key questions</p> <ul style="list-style-type: none"> What is the NEA? How many marks is the NEA? What percentage of the NEA is my final grade? 	
<p>Key Resources</p> <ul style="list-style-type: none"> Laptops Paper Folders Colouring pencils Range of materials Range of tools and equipment 	<p>Key vocabulary</p> <ul style="list-style-type: none"> NEA – Non exam assessment Coursework Context Contextual challenge Brief Specification Iteration Prototype Development Evaluation Analysis Thumbnails 	<p>Link to</p> <ul style="list-style-type: none"> <i>Character, British values, SMSC</i> <i>Literacy, numeracy</i> <i>Other curriculum areas</i> <i>Careers</i> <p><i>Maths</i></p> <ol style="list-style-type: none"> <i>Arithmetic and numerical computation</i> <i>Handling data</i> <i>Graphs</i> <i>Geometry and trigonometry</i> <p><i>Science</i></p> <ol style="list-style-type: none"> <i>Use scientific vocabulary, terminology and definitions</i> <i>Life cycle assessment and recycling</i> <i>Using materials</i>
<p>Additional notes:</p> <p>Recommended reading</p> <p>Grade 9-1 GCSE Design & Technology AQA Revision Guide: perfect for the 2023 and 2024 exams (CGP AQA GCSE DT)</p> <p>Recommended Internet websites TV and U-tube clips</p>		

GCSE Bitesize – AQA Technology

[GCSE Design and Technology - AQA - BBC Bitesize](#)

Technology student.com

<https://www.digitalartsonline.co.uk>

<https://qualifications.pearson.com/en/qualifications/edexcel-a-levels/design-technology-product-design-2017.html>

YouTube

How it's made

Recommended places of interest to visit

V&A Museum- textiles exhibitions

Address: Cromwell Road, London SW7 2R

<https://www.vam.ac.uk>

The Design museum

[Address](#): 224-238 Kensington High St, Kensington, London W8 6AG

<https://designmuseum.org/>

<https://www.museumofbrands.com/>

111 – 117 Lancaster Road

Notting Hill, W11 1QT

London

Short Term Plans for Year 10 DT Theory Graphics Resistant Materials and Textiles

Phase 1	PPT reference	Learning Intentions	Key Questions	Additional Information
Lesson 1 Industry and enterprise	See teams file unit 1 new and emerging technologies	<ol style="list-style-type: none"> 1. Understand the impact of new and emerging technologies on: The design and organisation of the workplace and the Tools and equipment 2. Be aware of how computers and automation have changed manufacturing through the use of robotics 3. Understand how innovation can drive product development and enterprise including the use of crowd funding and virtual marketing 4. Understand co-operative and fair trade organisation 	<i>See ppts and worksheets/home work sheets</i>	
Lesson 2 Sustainability	See teams file unit 1 new and emerging technologies	<ol style="list-style-type: none"> 1. Understand that new technologies need to be developed and produced in a sustainable way 2. Be aware of the impact that excessive use of certain materials has on the environment 3. Understand how the environment can be protected by responsible design and manufacturing 	<i>See ppts and worksheets/home work sheets</i>	

		<ol style="list-style-type: none"> 4. Understand how waste can be disposed of with the least impact on the planet 5. Understand the positive and negative impacts new products have on the environment 		
Lesson 3 People, culture and society	See teams file unit 1 new and emerging technologies	<ol style="list-style-type: none"> 1. Understand how technology push and market pull affect consumer choice and employment 2. Understand changes in job roles due to the emergence of new ways of working 3. Be aware of changes in fashion and trends and how they affect designers and manufacturers 4. Understand how new products can have both a positive and negative impact on society 	<i>See ppts and worksheets/home work sheets</i>	
Lesson 4 Production	See teams file unit 1 new and emerging technologies	<ol style="list-style-type: none"> 1. Understand contemporary and potential future use of automation, Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) 2. Be able to recognise and characterise the use of Flexible Manufacturing Systems (FMS) 3. Understand how Just In Time (JIT) and Lean Manufacturing contribute to manufacturing efficiencies 	<i>See ppts and worksheets/home work sheets</i>	

Lesson 5 Information design decisions	See teams file unit 1 new and emerging technologies	<ol style="list-style-type: none"> 1. Be able to evaluate the advantages and disadvantages of planned obsolescence from different perspectives 2. Understand how products can be designed to be repaired and recycled 3. Be aware of ethical and environmental concerns when designing with new technologies 	<i>See ppts and worksheets/home work sheets</i>	
Lesson 6 Assessment	See teams file unit 1 new and emerging technologies	<ul style="list-style-type: none"> • apply their knowledge in answers to a range of questions • be able to highlight areas of strength and any gaps in their understanding of this unit 		

Year 10 Graphics

Phase 1	PPT reference	Learning Intentions	Key Questions	Additional Information
Lesson 1	L1 Introduction	What is graphics and D&T? Rendering 2d 3d sketching	<ol style="list-style-type: none"> 1. What is Graphic Design? 2. What is rendering? 3. What is 2D and 3D? 	Introduction to exam board specification and requirements. Seating plan and initial resources to be organised.
Lesson 2	L2 Sketching	Sketching/ drawing/painting skills- Colour lesson- watermelon	<ol style="list-style-type: none"> 1. Why is a range of different communication techniques important? 	Drawing is often the area that students are lacking most confidence in. Students encouraged to sketch and render a range of different objects.

		Pencil, pen, watercolours, graphic pens, collage, computer generated Repeat patterns		Support, strategies and techniques covered to help develop confidence.
Lesson 3	L3 Equipment	Equipment unit 7 specialist equipment Which equipment and which materials Collage making of equipment – realism in making	1. What equipment do we use in Graphics?	A range of coloured card will be needed for this lesson.
Lesson 4	L4 Typography	Skill:-Typography Logos- guess who I am- designer logos What makes a good logo Design their own logo for themselves/Badge making	1. What is Typography? 2. Why is the choice of font important? 3. What is the difference between serif and sans serif?	
Lesson 5	L5 Screen Printing	Medium/advanced Cutting skills- Craft knives Chinese cut outs Screen printing process theory and practical	1. How do we cut safely using a craft knife? 2. What are the dangers when using a glue gun?	H&S demonstration. Spare copies needed of the stencils as students can often make a mistake. Review H&S training sheet.
Lesson 6	L6 Screen printing	Practical Screen printing T shirt designs- charity Screen print onto a piece of fabric	1. Can you produce an annotated sketch of screen printing? 2. What are the applications of screen printing? 3. What are the advantages and disadvantages of screen printing?	
Lesson 7	L7 Paper engineering	Skills simple cutting exercises- scissors Folded shapes as	1. What H&S control measures need to be considered when using a craft knife?	

		bunting, Snowflake , wind spinners		
Lesson 8	L8 Additional paper manipulation	printing processes Demonstrate embossing demonstrate lamination Die cut show the sissex machine in use	1. What are the other commercial printing processes?	

Year 10 Graphics

Phase 1 Continued	PPT reference	Learning Intentions	Key Questions	Additional Information
Lesson 9		Mechanisms Split pins- colour wheel Reveal revision wheel Moveable person Links and levers	2. What are the Primary colours? 3. What are the Secondary colours?	
Lesson 10		Mechanisms model making AUTOMATA designs	What does automata mean?	
Lesson 11		Create an advent calendar Vacuum forming , nets doors levers	1. Can you produce an annotated diagram of the Vacuum forming process? 2. What products are Vacuum formed?	
Lesson 12		Pop ups scoring and folding and mechanisms Pop up Christmas cards produce a set of pop up cards each with different styles/types of pop up mechanisms	What products could be produced using pop up mechanisms?	

Year 10 Graphics

Phase 2	PPT reference	Learning Intentions	Key Questions	Additional Information
Lesson 1	L1 Introduction	Shoe box container crate building design mini project	<ol style="list-style-type: none"> 4. What is container living? 5. What are the essentials for living in a confined space? 6. Why are smaller living spaces needed? 	Students will need to source a shoe box. For PP students we have a collection of spare boxes in the Graphics store cupboard.
Lesson 2	L2 Communication techniques	<p>To develop a wide range of creative design solutions through different drawing techniques...</p> <p>Drawing skills</p> <ul style="list-style-type: none"> • Third angle orthographic • Fashion sketching • Explosion drawings • System sketches 	<ol style="list-style-type: none"> 1. Why is annotation of design ideas important? 2. Why is a range of different communication techniques crucial? 	
Lesson 3	L3 CAD	To develop sketches using CAD (Google SketchUp)	<ol style="list-style-type: none"> 1. What is CAD? 2. What are the advantages of CAD? 3. What are the disadvantages of CAD? 	
Lesson 4	L4 Final design	To present a final design idea and production plan.	<ol style="list-style-type: none"> 1. What should be included in a final design proposal? 	
Lesson 5	L5 Prototype development	To begin manufacturing their final container home. Learning and developing their	<ol style="list-style-type: none"> 1. How do you present a diary of making? 2. Why is photographic evidence of the process important? 	

		architectural model making skills set.		
Lesson 6	L6 Prototype development	Continued production of prototype and development of model making skills.	1. How many different materials are you using?	
Lesson 7	L7 Prototype development	Continued production of prototype and development of model making skills.	1. How many different construction methods have you used?	
Lesson 8	L8 Prototype development	Continued production of prototype and development of model making skills.	Why is the development of prototypes important?	
Lesson 9	L9 Evaluation and testing	Testing and evaluation of the project. How to complete an effective testing and evaluation stage.	1. How could you test your finished prototype? 2. What does iteration mean? 3. How would you improve upon your product?	

Phase 3	PPT reference	Learning Intentions	Key Questions	Additional Information
Lesson 1	L1 Introduction	Music Festival and promotion Generation of the Name, logo and location	1. What does a music festival need? 2. What music festivals can you think of?	
Lesson 2	L2 Research	Research	3. What research needs to be carried out in order to design a music festival?	
Lesson 3	L3 Communication techniques	To develop a wide range of creative design solutions through different drawing techniques...	3. Why is annotation of design ideas important? 4. Why is a range of different communication techniques crucial?	

		<p>Drawing skills</p> <ul style="list-style-type: none"> • Third angle orthographic • Fashion sketching • Explosion drawings • System sketches 		
Lesson 4	L4 CAD	To develop sketches using CAD (Google SketchUp)	<ol style="list-style-type: none"> 4. What is CAD? 5. What are the advantages of CAD? 6. What are the disadvantages of CAD? 	
Lesson 5	L5 Final design	To present a final design idea and production plan.	<ol style="list-style-type: none"> 2. What should be included in a final design proposal? 	
Lesson 6	L6 Prototype development	To begin manufacturing their final container home. Learning and developing their architectural model making skills set.	<ol style="list-style-type: none"> 3. How do you present a diary of making? 4. Why is photographic evidence of the process important? 	
Lesson 7	L7 Prototype development	Continued production of prototype and development of model making skills.	<ol style="list-style-type: none"> 2. How many different materials are you using? 	
Lesson 8	L8 Prototype development	Continued production of prototype and development of model making skills.	<ol style="list-style-type: none"> 2. How many different construction methods have you used? 	
Lesson 9	L9 Prototype development	Continued production of prototype and development of model making skills.	<ol style="list-style-type: none"> 1. What surface finish will be added? 2. What is the purpose of a surface finish? 	

Lesson 10	L10 Evaluation and testing	Testing and evaluation of the project. How to complete an effective testing and evaluation stage.	4. How could you test your finished prototype? 5. What does iteration mean? 6. How would you improve upon your product?	
------------------	----------------------------	---	---	--

Year 10 Resistant Materials

Phase 1	PPT reference	Learning Intentions	Key Questions	Additional Information
Lesson 1				
Lesson 2				
Lesson 3				
Lesson 4				
Lesson 5				
Lesson 6				
Lesson 7				
Lesson 8				

Year 10 Graphics, Textiles and Resistant Materials

Phase 4	PPT reference	Learning Intentions	Key Questions	Additional Information
Lesson 1	Section A	Launch of NEA - Exploring different project possibilities	<i>What are the NEA briefs?</i> <i>What does the NEA look like?</i> <i>What projects could you pursue?</i>	
Lesson 2	Section A	Analysing their chosen context. Identification of client and project needs.	Design possibilities identified and thoroughly explored, directly linked to a contextual challenge demonstrating excellent understanding of the problems/opportunities. A user/client has been clearly identified and is entirely relevant in all aspects to the contextual challenge and student has undertaken a comprehensive	

			<p>investigation of their needs and wants, with a clear explanation and justification of all aspects of these. Comprehensive investigation into the work of others that clearly informs ideas.</p> <p>Excellent design focus and full understanding of the impact on society including; economic and social effects. Extensive evidence that investigation of design possibilities has taken place throughout the project with excellent justification and understanding of possibilities identified.</p>	
Lesson 3	Section A	Research – Client profile and interview.	A user/client has been clearly identified and is entirely relevant in all aspects to the contextual challenge and student has undertaken a comprehensive investigation of their needs and wants, with a clear explanation and justification of all aspects of these.	
Lesson 4	Section A	Complete a detailed product analysis/product disassembly	<p>What is a product disassembly?</p> <p>What is a Primary and Secondary analysis?</p> <p>How will these things help you with your project?</p>	
Lesson 5	Section A	Research the work of others	Who has produced a similar product/design to what you and your client would like to design?	
Lesson 6	Section A	Additional research – Location, materials joining methods etc.	<p>How will the location impact your design?</p> <p>What information is needed from your location?</p>	
Lesson 7	Section A	Additional research – Location, materials joining methods etc.	<p>How will you assemble your final design?</p> <p>What materials could you use?</p>	
Lesson 8	Section B	Write design specification	Comprehensive design brief which clearly justifies how they have considered their user/client's needs and wants and links directly to the context selected.	

			Comprehensive design specification with very high level of justification linking to the needs and wants of the client/user. Fully informs subsequent design stages.	
Lesson 9	Section C	Begin initial design ideas.	Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation. Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused. Extensive experimentation and excellent communication is evident, using a wide range of techniques. Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.	

Short Term Plans for Year 11 DT

Year 11 NEA Graphics Resistant Materials and Textiles

Phase 1	PPT reference	Learning Intentions	Key Questions	Additional Information
Lesson 1	Section A	Review NEA progress so far. Look at initial design ideas/communication techniques	<i>Refresher after the Summer break. Reminder of contexts and review stages completed so far.</i>	<i>Students often need a refresher after having 6 weeks off!</i>
Lesson 2	Section B	Design specification	Have the specification criteria been justified? Has it been agreed with the client? Is it measurable and technical?	Comprehensive design brief which clearly justifies how they have considered their user/client's needs and wants and links directly to the context selected. Comprehensive design specification with very high level of justification linking to the needs and wants

				of the client/user. Fully informs subsequent design stages.
Lesson 3	Section B	Final Design brief	What is a design brief? How does the final design brief differ from the initial design brief?	Comprehensive design brief which clearly justifies how they have considered their user/client's needs and wants and links directly to the context selected. Comprehensive design specification with very high level of justification linking to the needs and wants of the client/user. Fully informs subsequent design stages.
Lesson 4	Section C	Initial sketches	Are there a range of different ideas? Why is it important to have a range of ideas?	Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation. Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused. Extensive experimentation and excellent communication is evident, using a wide range of techniques. Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.
Lesson 5	Section C	Initial sketches	Are ideas annotated and evaluated? Are ideas rendered?	Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation. Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused.

				<p>Extensive experimentation and excellent communication is evident, using a wide range of techniques.</p> <p>Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.</p>
Lesson 6	Section C	Developed sketches	Are ideas presented using Graphical communication techniques?	<p>Isometric, Orthographic, Perspective, Birds eye etc.</p> <p>Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation.</p> <p>Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused.</p> <p>Extensive experimentation and excellent communication is evident, using a wide range of techniques.</p> <p>Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.</p>
Lesson 7	Section C	Developed sketches	<p>Are ideas evaluated and annotated?</p> <p>Has the client been consulted?</p> <p>Has the design specification been checked?</p>	<p>Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation.</p> <p>Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused.</p> <p>Extensive experimentation and excellent communication is evident, using a wide range of techniques.</p>

				Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.
Lesson 8	Section C	CAD	<ol style="list-style-type: none"> 7. What is CAD? 8. What are the advantages of CAD? 9. What are the disadvantages of CAD? 	<p>Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation.</p> <p>Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused.</p> <p>Extensive experimentation and excellent communication is evident, using a wide range of techniques.</p> <p>Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.</p>
Lesson 9	Section C	CAD	Use of appropriate CAD software to model and test out ideas. SketchUp, 2D Design, Photoshop, Illustrator, Mine craft etc.	<p>Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation.</p> <p>Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused.</p> <p>Extensive experimentation and excellent communication is evident, using a wide range of techniques.</p> <p>Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.</p>

Lesson 10	Section C	CAD	Use of appropriate CAD software to model and test out ideas. SketchUp, 2D Design, Photoshop, Illustrator, Mine craft etc.	<p>Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation.</p> <p>Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused.</p> <p>Extensive experimentation and excellent communication is evident, using a wide range of techniques.</p> <p>Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.</p>
Lesson 11	Section C	Modelling	<p>Why is paper and card used for initial prototypes?</p> <p>What is a prototype?</p>	<p>Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation.</p> <p>Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused.</p> <p>Extensive experimentation and excellent communication is evident, using a wide range of techniques.</p> <p>Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.</p>

Year 11 NEA Graphics Resistant Materials and Textiles

Phase 2	PPT reference	Learning Intentions	Key Questions	Additional Information
----------------	----------------------	----------------------------	----------------------	-------------------------------

Lesson 12	Section C	Modelling	Have models been photographed, documented, annotated and evaluated?	<p>Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation.</p> <p>Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused.</p> <p>Extensive experimentation and excellent communication is evident, using a wide range of techniques.</p> <p>Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.</p>
Lesson 13	Section D	Sketching development	<p>Do further development sketches show greater levels of detail and refinement?</p> <p>Is the iterative approach evident?</p>	<p>Very detailed development work is evident, using a wide range of 2D/3D techniques (including CAD where appropriate) in order to develop a prototype. Excellent modelling, using a wide variety of methods to test their design ideas, fully meeting all requirements.</p> <p>Fully appropriate materials/components selected with extensive research into their working properties and availability. Fully detailed manufacturing specification is produced with comprehensive justification to inform manufacture.</p>
Lesson 14	Section D	Sketching development	Do designs show signs of development and greater understanding of manufacture?	<p>Very detailed development work is evident, using a wide range of 2D/3D techniques (including CAD where appropriate) in order to develop a prototype. Excellent modelling, using a wide variety of methods to test their design ideas, fully meeting all requirements.</p> <p>Fully appropriate materials/components selected with extensive research into their working properties</p>

				and availability. Fully detailed manufacturing specification is produced with comprehensive justification to inform manufacture.
Lesson 15	Section D	CAD and modelling development	Have CAD designs been documented? Do they show further iteration?	Very detailed development work is evident, using a wide range of 2D/3D techniques (including CAD where appropriate) in order to develop a prototype. Excellent modelling, using a wide variety of methods to test their design ideas, fully meeting all requirements. Fully appropriate materials/components selected with extensive research into their working properties and availability. Fully detailed manufacturing specification is produced with comprehensive justification to inform manufacture.
Lesson 16	Section D	CAD and modelling development	Have CAD designs been documented? Do they show further iteration?	Very detailed development work is evident, using a wide range of 2D/3D techniques (including CAD where appropriate) in order to develop a prototype. Excellent modelling, using a wide variety of methods to test their design ideas, fully meeting all requirements. Fully appropriate materials/components selected with extensive research into their working properties and availability. Fully detailed manufacturing specification is produced with comprehensive justification to inform manufacture.
Lesson 17	Section D	Final design	Has the final design been reviewed against the specification? Are all the technical details included – materials, processes, sizes, costs and quantities?	Very detailed development work is evident, using a wide range of 2D/3D techniques (including CAD where appropriate) in order to develop a prototype. Excellent modelling, using a wide variety of methods to test their design ideas, fully meeting all requirements.

				Fully appropriate materials/components selected with extensive research into their working properties and availability. Fully detailed manufacturing specification is produced with comprehensive justification to inform manufacture.
Lesson 18	Section D	Production plan	Is the production plan detailed enough to enable third party manufacture?	Very detailed development work is evident, using a wide range of 2D/3D techniques (including CAD where appropriate) in order to develop a prototype. Excellent modelling, using a wide variety of methods to test their design ideas, fully meeting all requirements. Fully appropriate materials/components selected with extensive research into their working properties and availability. Fully detailed manufacturing specification is produced with comprehensive justification to inform manufacture.
Lesson 19	Section E	Making	The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill. A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances. Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome. An exceptionally high quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.	Students will work with a range of appropriate materials/components to produce prototypes that are accurate and within close tolerances. This will involve using specialist tools and equipment, which may include hand tools, machines or CAM/CNC. The prototypes will be constructed through a range of techniques, which may involve shaping, fabrication, construction and assembly. The prototypes will have suitable finish with functional and aesthetic qualities, where appropriate. Students will be awarded marks for the quality of their prototype(s) and how it addresses the design brief and design specification based on a contextual challenge.

Lesson 20	Section E	Making	Ensure photos are taken to document the process and are written up.	<p>The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill.</p> <p>A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances.</p> <p>Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome.</p> <p>An exceptionally high quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.</p>
Lesson 21	Section E	Making	Ensure photos are taken to document the process and are written up.	<p>The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill.</p> <p>A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances.</p> <p>Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome.</p> <p>An exceptionally high quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.</p>
Lesson 22	Section E	Making	Ensure photos are taken to document the process and are written up.	<p>The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill.</p>

				<p>A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances.</p> <p>Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome.</p> <p>An exceptionally high quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.</p>
Lesson 23	Section E	Making	Ensure photos are taken to document the process and are written up.	<p>The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill.</p> <p>A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances.</p> <p>Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome.</p> <p>An exceptionally high quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.</p>
Lesson 24	Section E	Making	Ensure photos are taken to document the process and are written up.	<p>The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill.</p> <p>A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances.</p>

				<p>Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome.</p> <p>An exceptionally high quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.</p>
Lesson 25	Section E	Making	Ensure photos are taken to document the process and are written up.	<p>The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill.</p> <p>A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances.</p> <p>Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome.</p> <p>An exceptionally high quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.</p>
Lesson 26	Section E	Making	Ensure photos are taken to document the process and are written up.	<p>The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill.</p> <p>A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances.</p> <p>Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome.</p>

				An exceptionally high quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.
Lesson 27	Section E	Making	Ensure photos are taken to document the process and are written up.	<p>The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill.</p> <p>A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances.</p> <p>Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome.</p> <p>An exceptionally high quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.</p>
Lesson 28	Section E	Making	Ensure photos are taken to document the process and are written up.	<p>The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill.</p> <p>A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances.</p> <p>Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome.</p> <p>An exceptionally high quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.</p>

Lesson 29	Section F	Testing and Evaluation	Ensure photos are taken to document the tests and are written up. Why is testing important? What tests can you carry out?	Extensive evidence that various iterations are as a direct result of considerations linked to testing, analysis and evaluation of the prototype, including well considered feedback from third parties. Comprehensive testing of all aspects of the final prototype against the design brief and specification. Fully detailed and justified reference is made to any modifications both proposed and undertaken. Excellent ongoing analysis and evaluation evident throughout the project that clearly influences the design brief and the design and manufacturing specifications.
Lesson 30	Section F	Testing and Evaluation	Ensure photos are taken to document the tests and are written up.	Extensive evidence that various iterations are as a direct result of considerations linked to testing, analysis and evaluation of the prototype, including well considered feedback from third parties. Comprehensive testing of all aspects of the final prototype against the design brief and specification. Fully detailed and justified reference is made to any modifications both proposed and undertaken. Excellent ongoing analysis and evaluation evident throughout the project that clearly influences the design brief and the design and manufacturing specifications.

Year 11 Revision Graphics Resistant materials and Textiles

Phase 3	PPT reference	Learning Intentions	Key Questions	Additional Information
Lesson 1	Slides			
Lesson 2	Slides			

Lesson 3	Slides			
Lesson 4	Slides			
Lesson 5	Slides			
Lesson 6	Slides			
Lesson 7	Slides			
Lesson 8	Slides			
Lesson 9	Slides			


year 10
Theory lessons

Phase 1: New and Emerging Technologies	Check 1	Check 2	Final check
Lesson 1: Industry and Enterprise			
I can explain the impact of new and emerging technologies on the design of work places and tools and equipment			
I Can explain how computers and automation have changed manufacturing through the use of robotics			
I Can explain how innovation can drive product development and enterprise			
I can explain the use of crowd funding and virtual marketing			
I can explain a co-operative and fair trade organisation			
Lesson 2: Sustainability			
I can explain that new technologies need to be developed and produced in a sustainable way			
I can explain the impact that excessive use of certain materials has on the environment			
I can list how the environment can be protected by responsible design and manufacturing			
I can explain how waste can be disposed of with the least impact on the planet			

I Can explain how the positive and negative impacts new products have on the environment			
Lesson 3: People culture and Society			
I can explain how technology push and market pull affect consumer choice and employment			
I can explain changes in job roles due to the emergence of new ways of working			
I can explain changes in fashion and trends and how they affect designers and manufacturers			
I can list and explain how new products can have both a positive and negative impact on society			

Phase 2: Energy, materials, systems and devises	Check 1	Check 2	Final check
Lesson 1: Energy generation			
I can list energy sources			

I can Understand how power is generated from fossil and nuclear fuels, wind, solar, tidal, hydroelectric and biomass			
I can be aware of the arguments for and against the selection of fossil fuels, renewable energy and nuclear power			
Lesson 2: Energy Storage			
I can identify mechanical power and understand how it is stored			
I can understand pneumatics and hydraulics as examples of kinetic pumped storage systems			
I can understand the functional properties of alkaline and rechargeable batteries			
Lesson 3: Modern Materials			
I can recognise a range of modern materials			
I can describe developments made through the invention of new or improved processes involving modern materials			
I can explain how modern materials can be used to alter functionality			
Lesson 4: Smart Materials			
I can recognise a range of smart materials			
I can understand how the functional properties of a range of smart materials can be changed by external stimuli			
Lesson 5: Composite materials and technical textiles			
I can understand how material properties can be enhanced by combining two or more materials			
I can recognise a range of composite materials and technical textiles			
I can understand how fibres can be manipulated to create technical textiles			

Lesson 6: Systems approach to design			
I can understand the principles of electronic systems			
I can use systems diagrams and flowcharts to analyse and solve a given problem			
I can understand the use of open and closed loop systems and subsystems			
I can recognise and understand common electronic input and output components			
Lesson 7: Electronic systems			
I can understand the difference between analogue and digital signals			
I can understand how microcontrollers are programmed as counters, timers and for decision making to provide functionality to products and processes			
I can understand the use of buzzers, speakers and lamps to provide functionality to products and processes			
Lesson 8: Mechanical Devices			
I can recognise and identify a range of movements			
I can understand the functions of mechanical devices to produce linear, rotary, reciprocating and oscillating movements			
I can understand how mechanisms can be used to change magnitude and direction of force, including levers, linkages and rotary systems			
Lesson 9: Assessment			
I can apply my knowledge in answers to a range of questions			
I can highlight areas of strength and any gaps in my understanding of this unit			

Phase 3: Materials	Check 1	Check 2	Final check
Lesson 1 Paper and Board			
I can know the primary sources of materials for producing papers and boards			
I can recognise and characterise different types of papers and boards			
I can understand how the physical and working properties of a range of paper and board products affect their performance			
Lesson 2: Natural and manufactured timbers			
I can know the primary sources of materials for producing natural and manufactured timbers			
I can recognise and characterise different types of natural and manufactured timbers			
I can understand how the physical properties of a range of natural and manufactured timbers affect their performance			
Lesson 3: Metals and alloys			
I can know the primary sources of materials for producing metals and alloys			
I can recognise and characterise different types of metals and alloys			
I can understand how the physical and working properties of a range of metals and alloys affect their performance			
Lesson 4: Polymers			

I can know the primary sources of materials for producing polymers			
I can recognise and characterise different types of polymers			
I can understand how the physical and working properties of a range of thermoforming and thermosetting polymers			
Lesson 5: Textiles			
I can know the primary sources of materials for producing textiles			
I can recognise and characterise different types of textile			
I can understand how the working and physical properties of a range of textiles affect their performance			
Lesson 6: Assessment			
I can apply my knowledge in answers to a range of questions			
I can highlight areas of strength and any gaps in my understanding of this unit			

Phase 6: Designing Principles	Check 1	Check 2	Final check
Lesson 1: Investigation primary and secondary data			
I can understand how primary and secondary data can be collected to assist the understanding of client and user needs			
I can explain how to write a design brief and produce a manufacturing specification			
I can understand how the environment, and social and economic challenges influence designing and making			

Lesson 2: The work of other designers			
I can identify how to investigate, analyse and evaluate the work of others			
I can understand how investigating the work of other designers can inform designing			
Lesson 3: The work off other design companies			
I can identify how to investigate, analyse and evaluate the work of others			
I can understand how investigating the work of other design companies can inform designing			
Lesson 4: Design strategies			
I can use a range of design strategies to help produce imaginative and creative design ideas			
I can understand how to explore and develop design ideas			
Lesson 5: Communication of design			
I can understand how to develop, communicate, record and justify design ideas			
I can be aware of a range of techniques to support clear communication of design ideas			
I can identify how to design and develop prototypes in response to client wants and needs			
I can critically evaluate prototypes and suggest modifications			
Lesson 6: Assessment			
I can apply my knowledge in answers to a range of questions			
I can highlight areas of strength and any gaps in my understanding of this unit			

Phase 7: Making Principles	Check 1	Check 2	Final check
Lesson 1: Selection of materials and components			
I can select and use materials and components appropriate to a specific task			
I can understand how functionality, availability and cost affect the selection of materials and components			
Lesson 2: Tolerances			
I can understand and use tolerances to ensure accuracy is considered when making a product			
I can understand how a range of materials are formed to designated tolerances			
I can understand why tolerances are applied during making activities			
I can understand how additional material may be required or removed by a cutting method, seam allowance or joint overlap			
Lesson 3: Material management and marking out			
I can understand how effective design planning can minimise waste			
I can be aware of how design adaptations and use of tessellation can save time and materials			
I can understand the value of using measurement and marking out to create an accurate prototype			
Understand the use of datum points and coordinates			
I can recognise and characterise the appropriate tools and methods to mark out a range of materials to create prototypes			
Lesson 4: Specialist tools, equipment, techniques and finishes			

I can understand how to select and use specialist tools, equipment, techniques and processes			
I can be aware of relevant health and safety issues when using specialist tools, equipment, techniques and processes to protect yourself and others from harm			
Lesson 5: Surfaces treatments and finishes			
I can identify and understand that surface treatments and finishes are applied for functional and aesthetic purposes			
I can understand how to prepare different surfaces for treatments and finishes			
I can understand how to select and apply appropriate surface treatments and finishes to a range of surfaces			
Lesson 6: Assessment			
I can apply my knowledge in answers to a range of questions			
I can highlight areas of strength and any gaps in my understanding of this unit			

Phase: Project 1 Graphics – Key skills	Check 1	Check 2	Final check
I can explain the course requirements			
I can explain what rendering means			
I can render shapes to make them look 3D			
I can vary the weight of my pencil line			

I can through rendering replicate a series of different material textures			
I can freehand sketch			
I can produce an Orthographic drawing			
I can produce an Isometric drawing			
I can produce a One Point Perspective drawing			
I can produce a Two Point Perspective drawing			
I can identify a range of different drawing/communication materials			
I can cut safely using scissors			
I can cut safely using a craft knife			
I can explain the Screen Printing process			
I can cut out a stencil and carry out the Screen Printing process			
I can identify the primary and secondary colours			
I can manufacture a series of different paper pop up mechanisms			
I can identify a wide range of Graphics equipment			
I can identify a wide range of Graphics materials			

Year 10

Phase: Project 2 Graphics	Check 1	Check 2	Final check
<i>I can complete an effective product analysis</i>			
<i>I can generate an effective mood board</i>			
<i>I can draw in Isometric</i>			
<i>I can draw in One Point Perspective</i>			
I can draw in Two Point Perspective			
<i>I can produce an Orthographic drawing</i>			
I can use Google SketchUp			
I can use 2D Design			
I can discuss the advantages of CAD			

I can discuss the disadvantages of CAD			
I can discuss the advantages of CAM			
I can discuss the disadvantages of CAM			
I can explain the importance of a prototype			
I can manufacture a prototype to a set scale			
I can cut safely using a craft knife			
I can confidently model using corrugated card board			

Year 10

Phase: Project 3 Graphics	Check 1	Check 2	Final check
<i>I can define branding</i>			
<i>I can explain the importance of a logo</i>			
<i>I can generate a range of different design ideas</i>			
<i>I can explain what makes an effective design ideas page</i>			
<i>I can use Adobe Photoshop</i>			
I can use Adobe Illustrator			
I can explain the importance of advertising			
I can discuss the key design decisions about my design work			
I can manufacture a model to scale			
I can cut safely using a craft knife			
I can confidently model using corrugated card board			

