

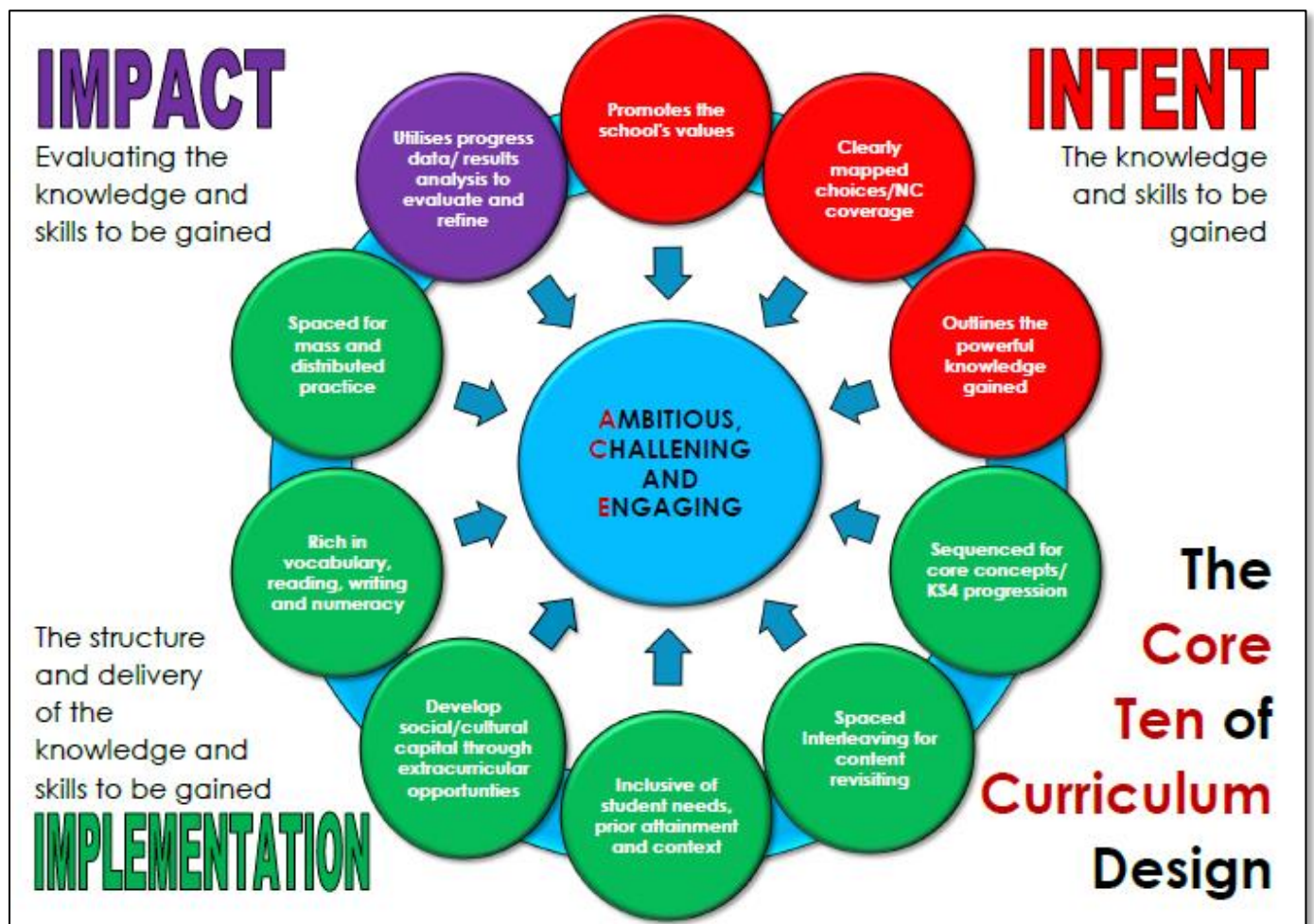
1. CURRICULUM INTENT OVERVIEW PLAN Key Stage 4

Subject: Design & Technology (Product Design)

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THINKING PROCESS - CURRICULUM INTENT OVERVIEW PLAN (KS4)

Intent Statement – at Landau Forte Amington, we believe learning powerful knowledge helps students achieve and creates a fairer society.

How are you trying to accomplish this, with this Programme of Study (PoS)?

DEFINITION: Powerful Knowledge is described as knowledge which enriches students' lives and creates a fairer society by providing students with intellectual power. It is knowledge which support students in engaging with the world and communicating with people regardless of background or social standing.

Providing a KS4 Curriculum which provides students with essential practical life skills to allow them to develop healthy and creative lifestyles.

The curriculum also prepares students in readiness for further education in a wide variety of subjects and skills.

Aims – what do you want pupils to be able to know and do by the time they finish this Programme of Study (PoS)?

Product Design – To develop skills using workshop tools which will enable them to complete DIY tasks at home in later life and apply these to possible future career options. To gain an understanding of where materials come from and their impact on the world around us and to have an understanding of different materials and their properties to enable them to make appropriate choices when manufacturing products. To gain understanding of industrial manufacturing processes in the work place. To gain appropriate knowledge required to make choices on future further education courses and careers.

Academy Values – at Landau Forte Amington, we want students to be ambitious, brave and kind. How are these values promoted in this PoS?

Ambitious – In all projects students are encouraged to strive to produce products which are of the highest quality and push their creativity and skills.

Brave – Students are required to be brave when undertaking tasks which require the use of new and interesting tools, equipment and processes in the workshop. Students are encouraged to try new ideas & skills and use any failures as a learning experience for future attempts. The design process is taught as an iterative process where students can learn from mistakes and adapt designs.

Kind – Students are required to work in groups and help each other in most projects. The end user of the product being designed is always considered and the impact on the wider community has to be taken into account.

KS4 Specification Choices – what topics are taught and does it ensure breadth and depth, as well as meet the requirements of the exam specification?

(Please note - the sequencing of topics will be explored in the implementation overview, the main purpose at this stage is to know what is taught)

YEAR		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
10	Unit/Topic	Drawing, presentation and communication techniques. Materials properties (Wood) in manufacture of pencil box.	MP3 Amplifier project Influential designers. Electronic systems. Theory Sustainability, product lifecycle, 6 R's	USB memory stick project Designing for a client CAD/CAM Theory Energy production and storage	Smart Materials project Thermo chromatic design task Theory Scales of production Industry and society	Mechanical toy project Designing and manufacturing and mechanical toy Theory Stresses and forces	NEA Exam board set project to be started. Investigation and research to be completed Theory Material sources Paper & board
	Specification/ Assessment Objective	3.3.4 Design Strategies 3.1.6.1 Material categories (timber) 3.1.6.2 Material properties (timber) 3.2.5 Using and working with materials 3.2.8 Techniques and processes 3.2.9 Surface finishes 3.3.9 Materials management A02	3.3.3 The work of others 3.1.4 Systems approach to designing 3.1.6.1 Material categories (polymers) 3.1.6.2 Material properties (Polymers) 3.2.8 Techniques and processes (soldering, laser cutter) 3.2.1 Selection of materials 3.2.3 Ecological and social footprint 3.3.4 Design strategies 3.2.4 Sources and origins A02, A03, A04	3.3.4 Design Strategies 3.3.11 Specialist techniques and processes 3.1.2 Energy generation and storage A01, A02, A03, A04	3.1.3 Development in new materials 3.3.4 Design strategies 3.2.7 Scales of production 3.1.1 New and emerging technologies A01, A02, A03, A04	3.1.5 Mechanical devices 3.2.5 Using and working with materials 3.3.4 Design strategies 3.3.9 Materials management 3.2.2 Forces and stresses A01, A02, A03, A04	3.3.1 Investigation, primary and secondary data 3.3.2 Environmental, social and economic challenge 3.3.3 The work of others 3.2.4 Sources and origins 3.2.6 Stock forms, types and sizes 3.1.6.1 Material categories A01, A03

11	Unit/Topic	<u>NEA</u> Creating design ideas, development (models and CAD)	<u>NEA</u> Product manufacture	<u>NEA</u> Product testing and evaluation	<u>Exam preparation</u> Revision program to cover all theory topics and exam technique	<u>Exam preparation</u> Revision program to cover all theory topics and exam technique	
	Specification/ Assessment Objective	3.3.4 Design strategies 3.3.5 Communication of ideas 3.3.6 Prototype development 3.3.7 Selection of materials and components 3.3.8 Tolerances A03, A04	3.3.9 Materials Management 3.3.10 Specialist tools and equipment 3.3.11 Specialist techniques and processes A02, A04	3.1.1 Critical evaluation informing design decisions A03			

Exam specification content missing from this PoS and why?	Content taught in addition to the exam specification and why?
All covered	

Powerful Knowledge Choices – what powerful knowledge is included in this PoS? Consider what knowledge is it important for our students to know, so that when they leave school they can engage in and lead discussions, with people from the most advantaged backgrounds? (Please note - the sequencing of topics will be explored in the implementation overview, the main purpose at this stage is to know what powerful knowledge is gained)

YEAR		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
10	Powerful Knowledge	Focussing the start of the course on communication techniques allows students to develop skills but also find the most effective communication tools for them. These can then be applied to their future projects and allows them to make choices in their wider life with regards career opportunities and communication techniques.	The systems approach applied to electronic systems can be applied to a wide variety of real life situations both physical and theoretical. Simple electronic systems principals can be applied to solving household problems with devices and systems.	The differences between different energy sources and their benefits to the environment and world around us.	Knowledge of smart/modern materials and new and emerging technologies	Knowledge of a wide variety of mechanisms used in many everyday objects.	Investigating a problem and planning how to solve and satisfy the task. Knowledge of where some everyday materials originate and are used.
	Why it is important to know	If students become confident in certain styles of communication other than written or verbal communication these can be applied in a variety of situations.	Career opportunities are opened up for students in electrical and electronic systems and engineering setting (A jobs search resulted in 236 jobs near Tamworth ranging from low level workshop engineers to senior electronics engineers)	Students will have the knowledge to make informed choices about energy use and contribute to the global environmental issues surrounding global warming and pollution. An understanding of energy production opens up careers in the energy sector.	Students will have the starting point to allow them to consider careers which they may not have been aware of. Developments in modern materials opens up ideas and opportunities which can give students the advantage of exploring alternative solutions to problems.	Mechanisms such as cams and followers, gears and linkages are used in a vast number of everyday objects. The opportunity to make repairs to vehicles, bikes and household objects due the understanding of how they function. Careers are open up in many mechanical engineering based areas	The ability to solve a wide ranging problem by investigating multiple options can be applied to many careers or everyday life.
11	Powerful Knowledge	Creating ideas and developing them to find an appropriate solutions which satisfies user's needs.	Manufacturing a product to a high standard by overcoming problems as they arise.	Making judgements about their own products and using feedback from others.			

	Why it is important to know	The creative process helps students to think and create by removing constraints and think outside the box. Students get the opportunity to be adventurous with ideas. Students also learn resilience by overcoming problems and facing setbacks.	No matter how well planned they think their products are they will all face unforeseen challenges which they have to overcome. Students learn to be adaptable and find solutions.	Being able to be critical about your own work is a skill which some people never master. If given the tools to do this students can apply it to many aspects of life. Likewise being able to accept feedback about their products can be used in future life and careers.			
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How does the Curriculum Intent meet the ACE curriculum design?

Ambitious	All projects are set up to push students thinking outside the box. Projects are career centred and allow students to investigate use of technology and skills which they may not be aware of and open their eyes to opportunities which they may have never expected to be within their grasp.
Challenging	All projects allow students to stretch their knowledge and more importantly practical abilities to master skills which they may not have been aware of let alone tried. Students are encouraged to utilise hand tools and modern manufacturing techniques in the workshop.
Engaging	If D&T is not engaging then the curriculum has been set up poorly. It incorporates a wide range of activities, skills and knowledge which will reach out to all students. Most projects allow students to focus designs to their own style and all result in a manufactured product. The NEA project is left quite open to allow students to explore the route they want to take.

What are the current strengths of the Curriculum Intent?

**All aspects of the specification are covered.
Very little of the theory knowledge is delivered independently it is linked to a design or design & make project.**

What specific actions have to be taken in response to the above? Please consider:

- KS4 Curriculum content changes;
- Powerful knowledge changes;
- Modifications to ensure an ACE curriculum design;
- CPD for teachers in your subject area;
- Additional research you have to consider as part of this review.

**Specific projects will need to be identified if a Design & Technology Textiles group is in place in September and NLO will need to complete CPD with AQA on producing NEA work.
Industrial links need to be established.**

AQA Design & Technology 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.