GREENWOOD ACADEMIES TRUST

Design and Technology Intent document

Pupils leave a GAT Academy with the academic qualifications & wider skills, characteristics & experiences, which will assist them to lead successful & happy lives

Our Academy Curriculum Principles:

Our curriculum is engineered to ensure pupils are equipped with the qualifications, knowledge, experiences, and skills to succeed in life and progress onto meaningful employment with training or further and higher education.

To achieve this our curriculum is designed to be:

- **Broad, ambitious and grounded in the national curriculum** – so that all groups of pupils have access to both academic and vocational programmes of study where challenge, achievement and progress are expected for all.
- **Knowledge rich** – so that all pupils acquire the core knowledge to which they are entitled and the powerful knowledge they need to expand beyond their own experiences
- **Intelligently planned** – sequenced to incrementally build long-term knowledge and develop cross-curricula schema, using evidence-based strategies to maximise learning.
- **Culturally rich** – broadening horizons and exposing pupils to the vast wealth of experiences in the wider global society be that the arts, music, sport and extra-curricular pursuits
- **Character building** – providing opportunities to develop leadership, organisation, resilience, initiative and communication skills from year 7 to 13
- **Context-specific –** so that pupils who are not yet secondary ready, or not yet confident in the English language can rapidly catch up and access the full curriculum, and those with limited opportunities to explore the world beyond Northampton can broaden their horizons.
- **Values-driven –** to develop principled young people who respect others in all their diversity, put kindness at the heart of all their decisions and strive to achieve excellence in all that they do.

Our academy values are *kindness, respect* and *excellence*

DESIGN AND TECHNOLOGY Intent:

Our faculty intent is comprised of following 3 sections:

1. Our vision for the subject/faculty and the purpose it serves for our pupils
2. Defining what the key concepts and core domains of knowledge are, that pupils will learn about
3. The end points our curriculum is working towards

1. Our vision

Design and technology is a logical, inspiring, and practical subject. The intent of the curriculum is to ensure that pupils apply the iterative process through creativity and imagination to design and make products that solve real and relevant problems within a variety of contexts, considering their own needs, wants and values as well as those of others.

Our vision is to prepare pupils to:

The curriculum will enable our pupils to:

Develop the creative, technical, and practical expertise needed to perform everyday tasks confidently.
Participate confidently and successfully in an increasingly technological world; and be aware of, and learn from, wider influences on design and technology, including historical, social/cultural, environmental.
Critique, evaluate and test their ideas and products and the work of others, both historical and present day.
Consider the costs, commercial viability, and marketing of products
Develop a broad knowledge of materials, components and technologies and practical skills to develop high quality, imaginative and functional prototypes
Learn to take risks, becoming resourceful, innovative, enterprising, and capable citizens.
Understand that high-quality design and technology is important to the creativity, culture, sustainability, wealth and well-being of the nation and the global community.
Be ambitious and open to explore and take design risks to stretch the development of design proposals, avoiding design fixation
Use key terminology related to design including those related to designing, innovation and communication; materials and technologies; making, manufacture and production; critiquing, values, and ethics
Work with present designers in residence at the V&A, experience.
Learn how designing in robotics is used to increase efficiency and maximise throughput in manufacturing at Festo
Understand how design movements can be used as a source of inspiration at The Charles Rennie Mackintosh House, 78 Derngate.

2. Our key concepts and core domains of knowledge

At Key Stage 3
Pupils will
Use research and exploration to understand user needs.
Identify and solve design problems using the iterative process
Understand how to reformulate problems given to them
Develop specifications to inform design solutions.
Use a variety of approaches to generate creative ideas
Develop and communicate design ideas using annotated sketches and 3-D modelling.
Select from and safely use specialist tools, techniques, processes, equipment, and machinery, including computer-aided manufacture.
Select from and use a wider range of materials, components considering their properties.
Analyse the work of past and present professionals and others to develop and broaden their understanding.
Investigate new and emerging technologies.
Test, evaluate and refine their ideas and products against a specification, considering the views of intended users and other interested groups.
Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers, and technologists.

At Key Stage 4, pupils who study GCSE Design and Technology
Over the life of the course, pupils will study:

Technical principles -

New and emerging technologies
Energy storage and generation
Using programmable components to bring functionality to products
Energy storage and generation
Mechanical devices and movement
Categorisation and properties of timbers, ferrous and non-ferrous metals, polymers, papers & boards
Sources, origins, physical and working properties of the material categories and their ecological and social footprint
Factors influencing material selection such as functional, aesthetic, environmental, availability, cost, social, cultural, and ethical
Specialist techniques and processes that can be used to shape, fabricate, construct, and assemble a high-quality prototype
Surface treatments and finishes

Designing and making principles -

Identify and understand client and user needs through the collection of primary and secondary data
Write a design brief and specifications from their considerations of human needs, wants and interests
Investigate and analyse the work of past and present professionals and companies
Use different strategies to generate ideas
Develop, communicate, record, and justify design ideas, applying suitable techniques
Design and develop at least one prototype that responds to needs and/or wants and is fit for purpose
Make informed and reasoned decisions, respond to feedback about their own prototypes
Select and work with appropriate materials and components to produce a prototype
Use specialist techniques and processes to shape, fabricate, construct, and assemble a high-quality prototype
Use specialist tools and equipment including CADCAM to create a specific outcome
Use appropriate surface treatments and finishes for functional and aesthetic purposes

At Key Stage 4, pupils who study Level 2 BTEC Tech Award in Art and Design – Design pathway

Over the life of the course, pupils will study:

Component 1 - Generating Ideas in Design.

In this component pupils will

Develop practical research and investigation skills.
An understanding of how and designers produce work for a specific purpose.
Apply practical ideas generation techniques and consider commercial applications for their ideas and communicate them visually.
Develop transferable skills such as research, investigation, and interpretation, which are some of the mainstays of successful designers.
This component will enable pupils to improve their practice for progression to further training or education.

Component 2- Develop Practical Skills in Design

In this component pupils will

Improve their practical skills through testing and reviewing their application of techniques and processes to materials when making products.
Develop practical design skills and explore techniques and work across a range of media used in design practice.
Safely work with materials, techniques, and processes to make fully functional prototypes that are commercially viable.
Review their progress and consider how to make improvements.

Component 3 – Responding to a Client Brief (External Assessment)

In this component pupils will

Interpret a client brief that is asking to produce specific design work for an identified audience.
Use their skills to understand the constraints and requirements of the brief.
Use planning and organisation skills to ensure that their work can progress and develop in a structured way.
Ensure that the work meets the requirements of the brief and present the work in an appropriate format for the client, to communicate the development and the final response.

At Key Stage 4, pupils who study Level 2 BTEC Tech Award in Creative Digital Media

Over the life of the course, pupils will study:

Component 1 - Exploring Media Products

In this component pupils will:

Examine how media products engage audiences for a given purpose.
Develop an understanding of the relationship between media products, their audiences and purposes
Select media products from audio/moving image sector and explore how genre, narrative and representation are combined to engage their audience.
Develop their understanding of how media products are created to appeal to their audiences
Deconstruct media products to examine how media production techniques combine to create meaning for audiences
Develop their understanding of how different production techniques combine to create meaning

Component 2- Developing Digital Media Production Skills

In this component pupils will:

Participate in workshops and classes to develop media production skills and techniques in audio/moving image sector.
Planning skills - develop narratives and storylines, synopsis, treatment, dialogue and sound scripts, screenplays, storyboards, and shot lists.
Skills and techniques for creating content relevant - shoot videos in different locations, use shot composition, framing, angle, camera movement, recording audio in a studio and on location, acoustics, microphones, ambient sound, recording levels.
Skills and techniques for combining, shape and refine content - editing audio, editing video, mixing sound, transitions, audio effects, visual effects.
Pre-production processes and practices - sound script, shooting script and storyboard.
Production processes and practices - recording audio and shooting footage.
Post-production processes and practices - editing audio, editing audio and video footage together into a finished extract, rendering audio and video.
Track their progress during this component, reflecting on their development of skills and techniques in workshops through to the application of pre-production, production and post-production processes and practices.
Use a skills audit to highlight strengths and areas for improvement, which should be used to set future targets.

Component 3 – Create a Media Product in Response to a Brief (External Assessment)

In this component pupils will
Understand how to develop ideas in response to a brief
Develop planning materials in response to a brief
Apply media production skills and techniques to the creation of a media product
Create and refine a media product to meet the requirements of a brief

3. The end points of our curriculum

Our pupils be able:

- Understand the needs and wants of a client.
- Investigate and analyse the work of other designers and other professionals.
- Use nature and the designing of other as sources of inspiration
- Effectively communicate their design thinking using drawing and rendering techniques as well as CAD.
- Creatively use CAM to make products that meet the requirement of a brief.
- Solve real life design problems to meet the requirements of a client.
- Apply progressively complex processes and techniques to materials to make functional products.
- Experiment with materials to understand their physical and working properties
- Understand the factors that influence design decisions- Cultural, religious, ethical, environmental, and economic issues.

- Understand the environmental impact of design decisions made by designers and manufacturers.
- Work collaboratively with others to solve design problems.
- Explain how designers and manufactures work in industrial and commercial settings.
- To use specialist language and vocabulary with confidence; recognise and apply these to research and investigations; communicating design ideas; reviewing and evaluating work.
- Demonstrate relevant safe working practices in design at each key stage.

At KS3

To investigate the work of other designers and use this as a source of inspiration for designing. Select and use tools and equipment to make products using their understanding of the environmental impact of their design decisions in material selection, allowing them to achieve at least a Grade 4 in design and Technology or pass in BTEC Art and Design.

AT KS4

Pupils will analyse the work of other designers as they investigate the needs and wants of a client. They will explore design opportunities to make informed design decisions that meet the specified requirements as they effectively communicate their design thinking. Pupils will use complex techniques and processes to make products within design constraints as they consider issues relevant to the design.
Pupils will present their work and effectively review the progress of their own work throughout the process.
This will allow them to achieve at least a grade 4 in GCSE Design and Technology or a standard pass in BTEC Art & Design or BTEC Tech Award in Creative Digital Media at the end of KS4, enabling them to progress, should they wish, to KS5 and beyond.