Design & Technology Curriculum Policy

"The innermost value of life is deep silence. From it arise the various areas of activity, tiny to tremendous activity. All these areas of life are integrated and perfectly coherent when the inner depth of consciousness, which is pure consciousness, shakes hands with the outer dynamism of great activity. This is brought about by Transcendental Meditation." **Maharishi Mahesh Yogi**

"The reservoir of energy and intelligence is at the source of thought. It's obvious that whatever energy and intelligence is displayed through our action, it all comes through our thinking - thinking is the basis of action - and whatever energy and intelligence is displayed in thinking originates from the source of thought. The secret of success is in handling the source of all energy." **Maharishi Mahesh Yogi**

At Maharishi School we strive for each child to reach the full potential of their creativity and their creative intelligence. We do this by practising Transcendental Meditation and Word of Wisdom and by following the path of Consciousness-based education, applying Maharishi's principles of teaching.

Design & Technology education is naturally interwoven with the fundamental aspects of Consciousness-based education:

- **Receptivity**: Children explore and take in the world around them, they observe the work of engineers, designers and manufacturers. They research and evaluate existing products and gather information about the needs of the **user** and the **purpose** of the products they will be designing.
- **Intelligence**: Pupils' intelligence enables them to assimilate and integrate the information they have gathered, building up and organising their knowledge.
- **Knowledge**: With this knowledge, they are able to make **design decisions** in order to optimise **functionality**, **innovation** and **authenticity** of their products.

- **Experience**: Guided by their knowledge, children select materials and tools, make prototypes, and test their designs. This lets them experience aspects of all 4 worlds - *physical* (the materials and tools they are working with, their prototypes and final products), *mental* (exploring their mental images derived from their research into users' needs, as well as their ideas about functionality, innovation etc.), *social & cultural* (influences from existing products and designs from around the world, collaborative work, peer review etc.) as well as the *transcendental* world (when they work intuitively and access deeper levels of creativity, made possible by TM and WoW)

- **Expression**: Children are able to express themselves and their knowledge throughout the **design** and **making** processes. They also test and **evaluate** their products, leading to improvement and truly personal outcomes.

  The 'design - make- evaluate' process of D&T also aligns with Consciousness-based education in the cycles of

  <p align="center">*Knowledge - Action - Achievement - Fulfilment*</p>

  Essentially, each project involves the acquisition of knowledge and a process whereby this knowledge is put into action (such as designing, prototyping, testing etc.). The result is a finished product and a sense of achievement. Achievement leads to fulfilment and celebration of pupils' work (e.g. exhibition, assembly, rewards).

At Maharishi School we strive for each child to be able to:

- develop confidence in designing, making and evaluating products in line with the six key Design and Technology principles:
  - **User**
  - **Purpose**
  - **Functionality**
  - **Design Decisions**
  - **Innovation**
  - **Authenticity**

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values
- be challenged and inspired to create and experience high quality design and technology projects
- learn how to take risks
- critique, evaluate and test their ideas and products and the work of others

Our school aims to deliver Design and Technology lessons guided by the following six principles as agreed by The National Curriculum 2014 and the National Curriculum Expert Group for Design and Technology:

User: Pupils should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or specific target group.

Purpose: Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use.

Functionality: Pupils should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes.

Design decisions: Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and draw on learning from other subjects. Through making design

decisions pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.

Innovation: When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open-ended starting points for learning.

Authenticity: Pupils should design and make products that are believable, real and meaningful to themselves and others.

Implementation

"Knowledge always has a purpose. The purpose of knowledge is effective action. The purpose of effective action is achievement; the goal of achievement is fulfilment. So the purpose of the knowledge is ultimately the fulfilment of the knower." **Maharishi Mahesh Yogi**

EYFS

Our EYFS provision is based on 'Working with the revised Early Years Foundation Stage: Principles into Practice' by Julian Grenier.

Design & Technology is interwoven in many aspects of early development, for example:

'Physical Development':
- provision of a wide range proprioceptive and tactile inputs
- refinement of motor skills through safely using a range of materials and tools
- supports awareness of two sides of the body, motor planning, eye-hand coordination and visual-spatial perception

'Language and Communication':
- talking about their work, checking understanding, articulating ideas and thoughts, new vocabulary, etc

'Understanding the World'
- exploring the natural world through observing and investigating materials and their properties.

We provide children with a range of materials to construct with, encourage them to think about and discuss what they want to make, discuss problems and how they might be solved as they arise, and we reflect with children on how they achieved their aims.

<u>Design</u>:
Children begin to use the language of designing and making, e.g. join, build and shape. They learn about planning and adapting initial ideas to make them better.

<u>Make</u>:
Children learn to construct with a purpose in mind. They select tools and techniques needed to shape, assemble and join materials.

<u>Evaluate</u>:
Children begin to talk about changes made during the making process, e.g. making a decision to use a different joining method

<u>Technical Knowledge</u>:
Children begin to understand some of the tools, techniques and processes involved in food preparation. They have basic hygiene awareness.

Children learn how to use a range of tools with care and precision, e.g. scissors, hole punch, stapler. They learn how everyday objects work by investigating them.

KS1 and KS2

Our KS1 and KS2 Design & Technology curriculum is based on the D&T Association's progression framework, the National Curriculum and the Key Learning Documents by Lancashire Curriculum Advisory Team. It covers the areas of

- **Structures**
- **Mechanisms**
- **Mechanical Systems**
- **Electrical Systems**
- **Textiles**

with **ICT** being an integral part of various projects.

Through our curriculum, our pupils engage with the core activities of D&T:

Design
- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups;
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design (CAD).

Make
- select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately;
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic.

Evaluate
- investigate and analyse a range of existing products;
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work;
- understand how key events and individuals in design and technology have helped shape the world.

Technical Knowledge
- apply their understanding of how to strengthen, stiffen and reinforce more complex structures;
- understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages);
- understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors];
- apply their understanding of computing to program, monitor and control their products.

Equal opportunities and inclusion

All children from all backgrounds have equal access to our D&T curriculum and we aim to provide suitable learning opportunities regardless of gender, ethnicity or home background. We adapt our teaching to meet pupils' individual needs so that each child can reach their full potential. We identify SEND and AGT and provide suitable learning challenges within our projects.

An integral part of our D&T provision is also to teach our pupils how to use tools and materials safely and how to care for equipment and for the environment.

Our curriculum plan: 🟨 **Design & Technology Long Term Plan**

Progression framework: 📄 **Progression Framework KS1 KS2.pdf**

Guided by the National Curriculum, the D&T association and the Lancashire Key Learning Documents, our planning reflects the progression of skills from EYFS to the end of Key Stage 2 and **all planning is available in the Primary Staff shared drive**:

D&T resources

MAHARISHI SCHOOL
CONSCIOUSNESS - BASED EDUCATION

Design & Technology long term plan   Years 1–3

	Autumn 2	Key Learning	Spring 2	Key Learning	Summer 2	Key Learning
Year 1	**MECHANISMS** Slides and Levers · Working with sliders and levers · Moving pictures (links to Literacy)	· Generating, modelling and communicating ideas. Planning making, selecting tools and using finishing techniques. · Exploring books and products; evaluating own product against original criteria. · Exploring sliders and levers; understanding types of movement; technical vocabulary.	**STRUCTURES** Freestanding Structures · Whose Home? · Chairs for Three Bears · Let's Get Building and Using Construction Kits Effectively · Door hinges Helpsheet	· Generating design ideas; developing modelling and explaining using talk, mock-ups and drawings. Planning making, selecting tools and new and recycled materials; using finishing techniques. Exploring existing freestanding structures; evaluating their own products against original criteria. · Know about strengthening structures; knowledge of vocabulary.	**TEXTILES** Templates and joining techniques · Three bears' picnic Blanket	· Generating design ideas; developing modelling and explaining using talk, mock-ups and drawings. Planning making, selecting tools and new and recycled materials; using finishing techniques. Exploring existing freestanding structures; evaluating their own products against original criteria. · Know about strengthening structures; knowledge of vocabulary.
Year 2	**MECHANISMS** Wheels and Axles · Toys · Let's look at vehicles	· Generate ideas and simple design criteria. Develop and communicate ideas through drawings and mock-ups. · Select a range of tools and equipment and materials to perform practical tasks. · Explore wheels and axles and evaluate their ideas and products against original criteria.	**MECHANISMS** Wheels and Axles · Wheels – working with wheels and axles	· Generate ideas and simple design criteria. Develop and communicate ideas through drawings and mock-ups. · Select a range of tools and equipment and materials to perform practical tasks. · Explore wheels and axles and evaluate their ideas and products against original criteria.	**TEXTILES** Templates and joining techniques · Joining and Fastening Fabrics · Puppets	· Design a functional, appealing product for a chosen user and purpose. · Generate, develop, and communicate ideas. · Use a range of textiles, tools and equipment to perform practical tasks. · Explore and evaluate existing textile products and their own ideas and products. · Understand how 3-D textile products are made, using joining, templates and finishing to create two identical shapes.
Year 3	**MECHANICAL SYSTEMS** Levers and linkages · Moving history book · Levers and linkages Poster and support pack	· Generate realistic ideas and use annotated sketches and prototypes to develop, model and communicate ideas. · Select and use tools with some accuracy to cut, shape and join paper and card. · Investigate and analyse their own and others' products with lever and linkage mechanisms. · Understand and use lever and linkages, and fixed and loose pivots.	**TEXTILES** Templates and joining techniques · Joining and Fastening Fabrics · Bendy Bags	· Design a functional, appealing product for a chosen user and purpose. · Generate, develop, and communicate ideas. · Use a range of textiles, tools and equipment to perform practical tasks. · Explore and evaluate existing textile products and their own ideas and products. · Understand how 3-D textile products are made, using joining, templates and finishing to create two identical shapes.	**ELECTRICAL SYSTEMS** Simple circuits and switches (including programming and control) · Developing handmade switches · Night lights (links to literacy) · Torches, lamps and lanterns	· Use annotated sketches, cross-sectional and exploded diagrams to develop and communicate ideas. · Select and use tools with some accuracy to cut, shape, join and finish. · Use construction materials and electrical components according to their functional properties and aesthetic qualities. · Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.

Design & Technology long term plan Years 4-6

	Autumn 2	Key Learning	Spring 2	Key Learning	Summer 2	Key Learning
Year 4	**STRUCTURES** Shell structures (including Computer-aided design) • Banish broken biscuits	• Generate ideas and designs, developing them through analysis of shell structures and use CAD to model and communicate ideas. • Plan the making and use appropriate tools and software, explaining their choices. Use computer-generated finishing techniques. • Evaluate shell structures and their own products. • Develop knowledge of nets of cubes and cuboids and more complex 3D shapes and how to construct strong, stiff shell structures.	**TEXTILES** 2D shape to 3D product • Aprons	• Generate design criteria for an appealing, functional product for specific users. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. Select fabrics and fastenings according to their functional characteristics. • Investigate a range of 3-D textile products. • Test their product against the original criteria and with the intended user.	**MECHANICAL SYSTEMS** Pneumatics • Make a mascot	• Generate their own realistic ideas and use annotated sketches and prototypes to develop, model and communicate ideas. • Select and use tools with some accuracy, cut and join materials and components such as tubing, syringes and balloons. • Investigate and find information on and products with pneumatic mechanisms and evaluate their own products and ideas against criteria and user needs. • Understand and use pneumatic mechanisms.
Year 5	**MECHANICAL SYSTEMS** Cams • Mechanisms with a message • Gears and pulleys • Working with Wheels and axles	• Generate a design from research; develop a specification, model and communicate ideas. • Produce lists of tools and materials and plans to make accurately assembled and well finished products within constraints. • Compare final product to the original specification; test products with the intended user and critically evaluate the product, considering the views of others. • Investigate famous manufacturing and engineering companies relevant to the project.	**STRUCTURES** Frame structures • Bird hide challenge • Working with paper straws	• Research user needs and existing products and develop and model innovative ideas into a design specification. • Formulate a plan with a step-by-step list of tasks and resources. • Use tools to accurately measure, mark out, cut, shape and join materials to make frameworks. • Use finishing techniques suitable for the product and critically evaluate their products against a range of criteria. • Research key events and individuals relevant to frame structures.	**ELECTRICAL SYSTEMS** More complex switches and circuits (including programming, monitoring and control) • Alarming vehicles • Developing handmade switches • Handmade switches help sheet	• Develop a design specification for a functional product that responds automatically to changes in the environment. • Formulate a step-by-step plan to making, listing tools, equipment, materials and components. • Use a computer control program to enable an electrical product to work automatically in response to changes in the environment. • Test and evaluate the system to demonstrate its effectiveness for the intended user and purpose. • Know and use technical vocabulary relevant to the project.
Year 6	**TEXTILES** Combining different fabric shapes • Fancy a bag? • Designer Bags	• Generate and communicate innovative ideas through research. • Produce detailed lists of equipment and fabrics and formulate step-by-step plans for making. • Investigate and analyse textile products linked to their final product and compare the final product to the original design specification. • Know that a 3-D textile product can be made from a combination of pattern pieces, fabric shapes and different fabrics and that fabrics can be strengthened, stiffened and reinforced.	**TEXTILES** Combining different fabric shapes (including Computer-aided design) • Designer Bags • Designing with textiles	• Generate innovative ideas through research and develop these using computer-aided design. Design functional, appealing products for the intended user that are fit for purpose based on a simple design specification. • Select and use a range of tools and equipment, including CAD, to make products that are accurately assembled and well finished. • Work within the constraints of time, resources and cost.	**MECHANICAL SYSTEMS** Pulleys and gears • Gears and pulleys • Fairgrounds • Frames for motorised projects	• Generate ideas through research and develop and communicate a simple design specification. • Select use a range of tools and equipment to make products that that are accurately assembled and well finished within the constraints of time, resources and cost. • Compare the final product to the original design specification and test the quality of the design, manufacture and functionality with the user. • Investigate famous manufacturing and engineering companies relevant to the project.

Impact

"The field of pure consciousness is the very source of life energy, the reservoir of wisdom, the origin of all power in nature, and the fountain-head of all success in the world." **Maharishi**

Assessment

We assess pupils by observing them as they design, make and evaluate, and we talk to them about their work, asking targeted questions, assessing the ongoing process, not only the finished product.

Children's answers, together with seeing their individual progression of skills, gives us the necessary insight into their specific needs for further development.

We also take into account the class as a whole, and we actively involve children in their assessment by using self-assessment and peer assessment.

Pupils' progress is documented in their D&T folders and in our Primary Staff shared drive.

We record pupils' progress against specific attainment targets, identifying pupils who work at, towards or beyond age-related expectations. The attainment targets are based on the Design & Technology association's Progression framework, rephrased by G.Jennings, as well as on the Key learning documents by the Lancashire Curriculum Advisory Team.

Areas of assessment:
- ability to develop, plan and communicate ideas;
- ability to work with tools, equipment, materials and components to make quality products;
- ability to evaluate processes and products;
- ability to reflect on and evaluate present and past design and technology, its uses and its impact;
- knowledge and understanding of materials and components;
- technical knowledge in the areas of mechanisms, structures, mechanical and electrical systems and textiles.

MAHARISHI SCHOOL

CONSCIOUSNESS - BASED EDUCATION

Our assessment sheets can be found here:

https://drive.google.com/drive/folders/1EZ9WCvAr0QVDnEbWU8Nzc3wiYAtOkUJV?usp=sharing

Example of an Assessment sheet:

Our Design & Technology curriculum

- develops our pupils' skills and knowledge in design, structures, mechanisms, electrical control and a range of materials, including food
- gives children the opportunity to develop skills, knowledge and understanding of designing and making functional products
- supports the progressive development of fundamental technological skills
- promotes critical thinking
- encourages children to think about important issues, such as sustainability
- nurtures creativity and innovation through design, and by exploring the designed and made world in which we all live and work
- helps to teach maths, english and other subjects on the curriculum in a fun manner and puts these subjects into context, making them easier to digest and more understandable
- inspires our pupils to become resourceful, innovative, enterprising and capable citizens.