Design and Technology Policy

Introduction

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education make for an essential contribution to the creativity, culture, wealth and well-being of the nation.

Intent

In our school the teaching of Design and Technology demands that pupils are confident and resilient in order to achieve success. Pupils are encouraged to become independent, creative problem-solvers and thinkers as individuals and as part of a team. Our curriculum is planned so that pupils follow a process where evaluation and communication are key. Design and Technology projects allow pupils to apply skills from across the curriculum; mathematics, science, computing and art – to design, make and evaluate products that solve real and relevant problems.

The ambitions for our curriculum:

- **High aspirations permeate across the school.**
- **The school offers a host of cultural experiences and enrichment opportunities.**
- **Our pupils develop a love of life-long reading.**
- **British Values are an intrinsic part of the school.**

The study of Design and Technology plays a key role in these ambitions. At the Emmaus Federation, we work hard to ensure Design and Technology delivers the national curriculum in full and has depth and breadth. Leading on from our curriculum moto: 'Small Village, Big Horizons', we want Design and Technology to become beneficial and significant in shaping the children's lives. We believe that our children should have big ambitions and we want the Design and Technology curriculum to support this.

In a world where engineering, technology and design are critical; we want to ensure the children know about the things that are possible in their future and that they can be part of it. Engineering is about making the world a better place, this is an extremely important

message that we want our children to understand. As teachers, it is our job to inspire the future and at the Emmaus Federation, we do this through having an engaging and inspiring Design and Technology curriculum.

Our Design and Technology teaching uses a problem solving and communication process to support learning and developing new skill. We want to create critical thinkers and shape learning which allows pupils to learn for themselves.

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Aims of Art and Design

Aims of Design and Technology:

- 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:
- critique, evaluate and test their ideas and products and the work of others;
- understand and apply the principles of nutrition and learn how to cook

Teaching and Learning

The Design and Technology curriculum at the Emmaus Federation covers not only the statutory elements of the National curriculum but also within creative cross curricular topics.

Our curriculum planning is in three phases (long-term, medium-term and short-term).

Our long-term planning maps the design and technology units studied in each term during each key stage. The subject leader devises this plan in conjunction with teaching colleagues in each year group.

Our medium-term plans give details of each unit of work for each term. Each class teacher is responsible for writing the short term plans for each lesson. These plans list the specific learning objectives and expected outcomes of each lesson. The subject leader reviews these plans. In this way we ensure that children have complete coverage of the National Curriculum.

We plan the topics in design and technology so that they build on prior learning. Children of all abilities have the opportunity to develop their skills and knowledge in each unit and, through planned progression built into the scheme of work, we offer them an increasing challenge as they move up the school.

Please refer to the medium term and long-term curriculum maps for further details.

Expressive Arts and Design Curriculum in the Early Years Foundation Stage

The Early Years Foundation Stage curriculum is based on seven areas of learning aiming to promote all aspects of a child's development. In EYFS, Expressive Arts and Design will be taught throughout the areas of learning but specific to the development of children's artistic and cultural awareness and will support their imagination and creativity. The children will have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials.

The EYFS curriculum starts from birth and children progress though each stage of development aiming to achieve the Early Learning Goals by the end of their Reception year. EYFS Expressive Arts and Design will enable the children to:

- Teach children to develop their colour-mixing techniques to enable them to match the colours they see and want to represent, with step-by-step guidance when appropriate.
- Provide opportunities to work together to develop and realise creative ideas. Provide children with a range of materials for children 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. Reflect with children on how they have achieved their aims.
- Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue.
- Provide a range of materials and tools and teach children to use them with care and precision. Promote independence, taking care not to introduce too many new things at once.
- Encourage children to notice features in the natural world. Help them to define colours, shapes, texture and smells in their own words. Discuss children's responses to what they see.
- Look at art and design in galleries and museums (including virtually) to generate inspiration and conversation about art and artists.

Implementation

The Design and Technology curriculum is carefully structured and sequenced to ensure coverage and progression as the children move through the school. The curriculum is broken down into knowledge building blocks and the knowledge is sequenced and then built upon over time: what has been taught before and what the pupils' need to know to reach their end point - spiral progression. This is set out in more detail in our termly plans. The enquiry questions and the key vocabulary are implemented in our knowledge organisers and brought to life on working walls and

within the learning objectives for the lesson.
There are specific curriculum areas of knowledge that build together to enable our children to become successful in all area of Design and Technology.

In KS1 these are:

1. **Design**
   - design purposeful, functional, appealing products for themselves and other users based on design criteria
   - generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
2. **Make**
   - select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
   - select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
3. **Evaluate**
   - explore and evaluate a range of existing products
   - evaluate their ideas and products against design criteria
4. **Technical knowledge**
   - build structures, exploring how they can be made stronger, stiffer and more stable
   - explore and use mechanisms [for example, levers, sliders, wheels and axles] in their products
5. **Food and Nutrition**
   - use the basic principles of a healthy and varied diet to prepare dishes
   - understand where food comes from

In KS2 these are:

1. **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
2. **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 qualities
3. **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

4. **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
5. **Food and Nutrition**
   - understand and apply the principles of a healthy and varied diet
   - prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
   - understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed

Application of knowledge

To enable our children to become successful in Design and Technology, we have identified the application of knowledge that will be needed. The application of knowledge for each area of Design and Technology studied is identified and this knowledge can then be applied across the whole of the curriculum so our children leave our school 'knowing more and being able to do more'. This is set out in more detail in our termly plans.
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- **Investigation**
- **Expression**
- **Interpretation**
- **Application**
- **Analysis;**
- **Synthesis**
- **Evaluation**

INVESTIGATION – in Design and Technology this includes:

- asking relevant questions;
- using a variety of sources to find out about events, people, processes and changes.
- carrying out investigative work to develop a better knowledge of products around us.

EXPRESSION – in Design and Technology this includes:

- the ability express opinions (using product knowledge.)
- the ability to suggest how products work in the real world.

INTERPRETATION – in Design and Technology this includes:

- the ability to use technical vocabulary to describe and explain different products and talk about their purpose in making the world a better place.
- the ability to interpret the purpose of products and how they benefit the world.
- The ability to interpret a design brief.

APPLICATION – in Design and Technology this includes:

- applying new skills to making products.
- applying designing skills to suit a design brief.
- balancing need, purpose and aesthetic qualities.

DISCERNMENT – in Design and Technology this includes:

- explaining the importance of products.
- developing insight into design, designers, skills and needs.
- seeing clearly for themselves how products might improve the world we live in.

ANALYSIS – in Design and Technology this includes:

- distinguishing between opinion, belief and fact.
- using product research to draw conclusions or suggest hypotheses.
- distinguishing between the need of the product and the benefit of it.
- understanding the purpose of a design brief and how to best achieve it.

SYNTHESIS – in Design and Technology this includes:

- understanding the balance of product development in improving the world.
- connecting different aspects of life for people across the world to create product which will support and benefit.

EVALUATION – in Design and Technology this includes:

- the ability to evaluate a product.
- weighing up the respective evidence available and reach conclusions.

Processes for Effective Learning in Design and Technology

1. Identify questions.
These covers identifying questions and defining enquiries, using a range of methods, media and
sources. It includes the skill of investigation.

2. Plan and carry out enquiries.
This includes carrying out and developing enquiries by gathering, comparing, interpreting.
and analysing a range of information, ideas and viewpoints.

3. Present and explain findings.

This involves expressing and explaining ideas and feelings, suggesting interpretations of findings and analysing the range of information.

4. Empathise and reflect.
This involves using empathy, critical thought and reflection to consider their learning and how they feel about it.

5. Evaluate.
This involves evaluating their learning and considering how it might apply to their own lives.

The Daily Implementation of Design and Technology at the Emmaus Federation

- Knowledge Organisers: Children have access to key knowledge, language and meanings to understand Design and Technology and to use these skills across the curriculum.
- Working Walls: Design and Technology Working Walls throughout school focus on key knowledge, vocabulary and questions and exemplify the terminology used throughout the teaching of Design and Technology.
- Subject specific vocabulary: Identified through knowledge organisers and working walls and highlighted to the children at the beginning of and during lessons.
- EYFS: Reception children are given a secure grounding in the Prime Areas of learning, ensuring they have a good foundation on which to build through the specific areas, including Understanding the World. Areas of provision are enhanced to ensure vocabulary understanding and extension and develop understanding of the world around them.
- Books: Children will have access to a growing variety of subject specific fiction and non-fiction books, available in Design and Technology lessons, other lessons and in the class book area. Wherever possible, children will use a range of non-fictions books which include elements of design. This is especially important during food and nutrition lessons.
- Use of existing product artefacts: Where possible we use existing products for children to explore and investigate. We believe that handling real objects enhanced the children's knowledge, understanding and skills.
- Consistent teaching sequence: Design and Technology lessons will include a range of learning opportunities including putting the learning in the big picture, placing of the area being studied in the context of previous learning, a brief review of learning covered in previous lesson/s, specifying key vocabulary to be used and its meaning, conducting product investigation, design skills followed by a design and make assignment. Ensuring that children will be designing and making an achievable product.
- Learning environment: The learning environment is designed to ensure children develop their Design and Technology knowledge and continue to know more and remember more. Working walls are key drivers to this, with teachers referring to them during lessons.

- Research: Children will be asked to research products and processes in relation to aspects of their learning independently. This allows the children to have ownership over their curriculum and lead their own learning.
- Basic skills -English, Maths and ICT skills are taught during discrete lessons but are revisited in Design and Technology so children can apply and embed the skills they have learnt in a purposeful context. The expectation is that standards in writing in Design and Technology are comparable with standards in English lessons.
- Cultural Capital - We plan visits, visitors and in-school WOW days to provide first-hand experiences for the children to support and develop their learning.

Equal Opportunities

The teaching of Art and Design follows the school's policy on SEND and differentiation and aims to provide all children with equal opportunities. The Governing Body ensures that the school does not discriminate against any pupil on the ground of disability, sex or race in deciding admissions, providing the curriculum, teaching and guidance; in applying standards of behaviour, dress and appearance; and in the allocation of resources and other benefits and facilities which the school provides. The school prides itself on its ability to welcome and involve children of all abilities, backgrounds and heritage. Children are recognised as individuals and both supported and challenged at their own level of development. Our main principal aim is that all children achieve the best that they can be, in all aspects of their development, during their time within the Federation.

Health and safety

Health and safety is important, particularly when working with tools, equipment and resources. Children should be given suitable instruction on the operation of all equipment before being allowed to work with it.

Children need to be taught how to:

- use tools and equipment correctly
- recognise hazards and risk control

Children should be:

- strictly supervised in their use of equipment at all times.
- taught to respect the equipment they are using and to keep it stored safely while not in use.
- taught to recognise and consider hazards and risks and to take action to control these risks, having followed simple instructions.

Food Hygiene

- Pupils and staff will take care to undertake appropriate hand washing and other hygiene related activities prior to preparing food.
- Pupils and staff working with food must wear aprons designated for cooking.
- Painting equipment must not be washed up or used in the sink in the medical room.
- All jewellery should be removed and hair tied back.

Role of the Design and Technology Coordinator

- Endeavour to promote a dynamic approach to the development of Design and Technology ensuring that it has a high profile.
- To evaluate the standards of Design and Technology teaching through the analysis of assessment data, book looks and learning journeys.
- To update the Design and Technology curriculum and oversee its implementation by other staff.
- Keep up to date with developments in Design and Technology.
- Report back on training attended.
- Advise and support staff with the teaching and learning of Design and Technology.
- Be responsible for overall auditing and upkeep of all school Design and Technology resources and facilities. To organise any budgets made available from various funds and to ensure money is used to its best advantage.
- Regularly review and update the school policy statement and guidelines as required.
- To work closely with the lead governor for Design and Technology.

Signed By: **L Done and B Slaughter**

Position: **Design and Technology Co-ordinator**

Date: **February 2022**