



# Design Technology Policy

Approved by Curriculum and Progress Committee: 01.10.2015

*Minute No: 45.1/15 (C/P)*

To be reviewed by: Autumn Term 1 2017

## INTRODUCTION

### Purpose

Design and technology is an inspiring 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 other subjects 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.

### Aims

The national curriculum 2014 for design and technology aims to ensure that all pupils;

- 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.

## **PROCEDURES AND PRACTICE**

### **Teaching**

A range of teaching methods together with the aid of lesson plans may be used during design technology activities which may include verbal instruction, Makaton signs, demonstrations, questions and answers, traditional talks, PowerPoint presentations, educational visits, television and video presentations and ICT to stimulate pupils.

There are two strands of subject content that need to be consistent across all key stages, these are;

- Design and making
- Cooking and nutrition

Wherever possible, 'Cooking and nutrition' should be taught with 'design and making' rather than separately. There should be at least one 'Cooking and nutrition' a year (for a term). The other two terms should focus on 'Design and making'.

### **Planning**

#### **EYFS/Primary**

A yearly rolling programme is in place for teachers to follow. Teachers need to complete medium term plans using this rolling programme each term ensuring they meet the requirements of the curriculum. These plans need to be placed on shared and in the class planning folder. Any DT activities should be highlighted in dark blue. Teachers also need to produce weekly short term plans which should highlight where DT is taking place, again highlighting in dark blue.

#### **Middle**

A yearly rolling programme is in place for teachers to follow. Teachers need to complete medium term plans using this rolling programme each term ensuring they meet the requirements of the curriculum. These plans need to be placed on shared and in the class planning folder. There should be a DT lesson once a week, but DT activities can be additionally used across the curriculum (these additional activities need to be highlighted on planning in dark blue).

## Upper

Teachers need to complete medium term plans ensuring they are teaching DT as part of options and cooking and nutrition within independent living skills. The DT activities need to be highlighted in dark blue. These plans need to be placed on shared and in the class planning folder. Teachers also need to produce weekly short term plans, again highlighting in dark blue where DT is taking place.

### What/When are DT Skills Taught?

#### Designing and making subsections:

- Design
- Make
- Evaluate
- Technical knowledge

#### Implicit curriculum principles for DT across the key stages:

- User - pupils should consider who their products are for
- Purpose - pupils should decide which tasks their products will perform
- Functionality - pupils should think about how their products will work
- Design Decisions - pupils should have opportunities to make informed choices
- Innovation - pupils should have scope to be original with their thinking
- Authenticity - pupils should design and make products that are real, believable and can be evaluated through use

#### Key stage 1

Through a variety of creativity and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in a repetitive process of designing and making with the aim of approaching a desired goal. They should work in a range of relevant contexts (for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment).

When designing and making, pupils should be taught to:

#### 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.

#### 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.

#### Evaluate

- Explore and evaluate a range of existing products
- Evaluate their ideas and products against design criteria

#### 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.

#### Key stage 2

Through a variety of creativity and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in a repetitive process of designing and making with the aim of approaching a desired goal. They should work in a range of relevant contexts (for example, the home, school, leisure, culture, enterprise, industry and the wider environment).

When designing and making, pupils should be taught to:

#### 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

#### Make

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

#### Evaluate

- Investigate and analyse a range of existing products

- Evaluate their ideas and products against their own design criteria 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.

### Key stage 3

Through a variety of creativity and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in a repetitive process of designing and making with the aim of approaching a desired goal. They should work in a range of domestic and local contexts (for example, the home, health, leisure and culture), an industrial contexts (for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion).

When designing and making, pupils should be taught to:

### Design

- Use research and exploration, such as the study of different cultures, to identify and understand user needs
- Identify and solve their own design problems and understand how to reformulate problems given to them
- Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations
- Use a variety of approaches (for example, biomimicry and user-centred design), to generate creative ideas and avoid stereotypical responses
- Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer based tools.

### Make

- Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture (the use of computer software to control machine tools and other machinery to create a piece of work)

- Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties

#### Evaluate

- 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, taking into account 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

#### Technical Knowledge

- Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
- Understand how more advanced mechanical systems used in their products enable changes in movement and force
- Understand how more advanced electrical and electronic systems can be powered and used in their products (for example, circuits with heat, light, sound and movement as inputs and outputs)
- Apply computing and use of electronics to embed intelligence in products that respond to inputs (for example, sensors), and control outputs (for example, actuators), using programmable components (for example, microcontrollers).

#### Key stage 4/5

Through a variety of creativity and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in a repetitive process of designing and making with the aim of approaching a desired goal. They should work in a range of domestic and local contexts (for example, the home, health, leisure and culture), an industrial contexts (for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion).

When designing and making, pupils should be taught to;

#### Design

- Use research and exploration, such as the study of different cultures, to identify and understand user needs
- Identify and solve their own design problems and understand how to reformulate problems given to them
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### Technical Knowledge

- Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
- Understand how more advanced mechanical systems used in their products enable changes in movement and force
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### Cooking and Nutrition

Cooking and nutrition is compulsory in all key stages.

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is

a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

- Wherever possible 'cooking and nutrition' should be taught with 'designing and making' rather than separately.
- Only teach the parts of designing and making that are relevant.
- Use a range of domestic, local and industry contexts e.g. health, home, leisure, culture, food, industry, agriculture when working with food in D&T
- Heat sources do not have to be used at KS1

Pupils should be taught to;

#### Key stage 1

- Use the basic principles of a healthy and varied diet to prepare dishes
- Understand where food comes from.

#### Key stage 2

- 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.

#### Key stage 3

- Understand and apply the principles of nutrition and health
- Cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet
- Become competent in a range of cooking techniques (for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes)
- Understand the source, seasonality and characteristics of a broad range of ingredients.

#### Key stage 4/5

- Understand and apply the principles of nutrition and health
- Cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet
- Become competent in a range of cooking techniques (for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes)

- Understand the source, seasonality and characteristics of a broad range of ingredients.

### **Health and Safety**

All staff who deliver the National Curriculum MUST ensure that there is close supervision and guidance at all times, particularly in the use of materials, substances, tools, machinery and all other equipment. Every person working or observing MUST use the appropriate safety clothing, equipment and personal protection to comply with Health and Safety Regulations and Legislation. All teachers, pupils and teaching assistants MUST be made aware of personal safety, issues and regulations which relate to themselves and how their actions may affect others.

Inspection and risk assessment of equipment, machinery and safety devices are inspected and examined. This is carried out by an independent safety organisation.

### **Assessment**

EYFS and Key Stages 1, 2 and 3 - delivery is carried out in the classroom and the class teacher monitors the delivery and evaluation of pupils' progress.

At Key Stage 4 and 5 the pupils undertake Design Technology projects carried out in the classroom and the class teacher monitors the delivery and evaluation of pupils' progress.

All teachers who deliver the curriculum for design technology will use P level descriptors and/or the new level descriptors based on the 2014 National Curriculum, where appropriate these will be recorded on the school documentation.

### **Role of the Subject Leader**

The subject leader oversees the planning and delivery of design technology throughout school working with the Headteacher and all staff to produce a coherent curriculum for pupils.

- To keep up to date with government initiatives related to Design technology.
- To participate in relevant training to support a broad knowledge of Design technology across all ages and abilities in school.
- Work with Assistant Heads to monitor progress in Design technology.

- To work with Assistant Heads to discuss support they may need and resources required in each department.
- To ensure Design technology is made clear on the Long Term Planning at all Keys Stages.
- To ensure Design technology is made clear on the Medium Term Planning at all Key Stages.
- To monitor teacher long term and medium term planning for Design technology.
- To support teachers in ensuring Design technology is delivered effectively across the school, this may include peer observations/shadowing good practise.

### Parent/Carer Involvement

- Across the school teachers send a mixture of homework for parents/carers to complete with their child/young person, this often involves tasks related to Design technology.
- Parents/Carers are informed of pupil's progress via Annual Reports and the Home/School Diary.

### Equality

All pupils and staff irrespective of race, creed, gender or disabilities will have equal opportunities to participate in all aspects of the design technology curriculum teaching and technology activities. Adapting and modification of the working area, tools and equipment together with special aids will be considered.

### Monitoring of the policy

- Monitored by subject leader.
- Teachers MTP will be monitored by subject leader each term.

### British Values

Work related to the British Values (democracy, individual liberty, mutual respect and tolerance towards those with different ideas, faiths and beliefs) are embedded within many of the Design technology activities we plan within Ashgate Croft School. We enable our students to develop their self-knowledge, self-esteem and self-confidence and encourage them to accept responsibility for their behaviour, show initiative, and to understand how they can contribute positively to the lives of those living and working in the locality of the school and to society more widely. We also encourage our students to respect other people, their views and ideas.

## **Children's Rights**

Pupils also have the opportunity to develop their knowledge about children's rights through Design technology. Rights such as, the right to learn (Article 28 and 29), the right to their own ideas and choices (Article 12 and 13) and the right to have and learn about healthy food (Article 24), the right to a safe environment (Article 6) and the right for a child with a disability to live a full and decent life in conditions that promote dignity, independence and an active role in the community. Governments must do all they can to provide free care and assistance to children with a disability (Article 23).

## **REFERENCES**

Department for Education 2014 'Design and technology' Programmes of Study: Key stages 1, 2 and 3'

<https://www.gov.uk/government/publications/national-curriculum-in-england-designandtechnology-programmes-of-study>