Skills and learning

Design and technology
in the national curriculum for Wales

This document highlights those statements or sections in the programmes of study for design and technology that provide explicit opportunities for
- developing thinking
- developing communication
- developing ICT
- developing number

and promoting
- Curriculum Cymreig and Wales Europe and the world
- personal and social education
- careers and the world of work.

The number and context of such opportunities are for schools to determine within their curriculum overview/curriculum planning.

Developing thinking

Schools should provide opportunities, where appropriate, for learners to develop and apply their thinking across the curriculum through the processes of planning, developing and reflecting.

In design and technology, learners design and make products through the iterative process of creating and developing ideas, designing products, planning, making and reflecting on their decisions and outcomes in terms of their finished product.

In design and technology, opportunities to develop thinking apply throughout the Skills and Range sections of the programmes of study for Key Stages 2 and 3.

Developing communication

Schools should provide opportunities, where appropriate, for learners to develop and apply their communication skills across the curriculum through the skills of oracy, reading, writing and wider communication.

In design and technology, learners ask questions and seek out information to develop and support their design ideas. They communicate and record their ideas and intentions by explaining, writing, sketching, using detailed technical drawings and three-dimensional models.

Key Stage 2

<u>Skills</u>

Designing

Pupils should be given opportunities to:
3. develop a simple specification/recipe for their products indicating their intentions and approach
5. develop and communicate their design ideas in a variety of ways, using ICT and models where appropriate.

Making

Pupils should be given opportunities to:
6. discuss their products, and evaluate their work, e.g. explain why and how they made their product and what they think about its function, features, performance, taste.

Developing ICT

Schools should provide opportunities, where appropriate, for learners to develop and apply their ICT skills across the curriculum by finding, developing, creating and presenting information and ideas and by using a wide range of equipment and software.

In design and technology, learners research and develop their ideas by using ICT to find information from databases and the internet. They communicate and present their ideas using word processors, presentation software, computer-aided design (CAD) and computer-aided manufacture (CAM).

Key Stage 2

<u>Skills</u>

Designing

Pupils should be given opportunities to:
5. develop and communicate their design ideas in a variety of ways, using ICT and models where appropriate.

Making

Pupils should be given opportunities to:

Systems and control

15. use programmable/computer control systems that can create, test, modify and store instructions to control events, e.g. enter and store instructions in a programmable toy, write a simple programme for a floor turtle, control their products using computer hardware/software.

Key Stage 3

<u>Skills</u>

Designing

Pupils should be given opportunities to:
6. explore, develop and communicate design ideas in a range of ways, including annotation, drawings and CAD, e.g. clip art libraries, internet resources, scanners, digital cameras.

Making

Pupils should be given opportunities to:
4.   develop techniques to ensure consistency and accuracy including the use
     of CAM, e.g. CAM software linked to a cutter/plotter, lathe, milling machine
     or sewing machine

Systems and control

 21. build microprocessor and computer control systems into products.

Developing number

Schools should provide opportunities, where appropriate, for learners to develop and apply their number skills across the curriculum by using mathematical information, calculating, and interpreting and presenting findings.

In design and technology, learners use mathematical information and data, presented numerically and graphically, to research and develop their ideas. They use number to measure and calculate sizes, fits and materials.

Key Stage 2

<u>Skills</u>

Making

Pupils should be given opportunities to:
3.   measure, mark out, cut, shape, join, weigh and mix a range of materials and ingredients, using appropriate tools/utensils, equipment and techniques.

Curriculum Cymreig (7–14) and Wales, Europe and the World (14–19)

Schools should provide opportunities, where appropriate, for learners aged 7–14 to develop and apply knowledge and understanding of the cultural, economic, environmental, historical and linguistic characteristics of Wales. Learners aged 14–19 should have opportunities for active engagement in understanding the political, social, economic and cultural aspects of Wales as part of the world as a whole.

In design and technology, learners should be given opportunities to use the rich characteristics and resources of Wales as a source of inspiration and a context to design and make products.

Key Stage 3

Range

Pupils should be given opportunities to develop their design and technology capability through:
- reflecting on the work of designers, inventors, architects and chefs, including those from Wales.

Personal and social education

Schools should provide opportunities, where appropriate, for learners to promote their health and emotional well-being and moral and spiritual development; to become active citizens and promote sustainable development and global citizenship; and to prepare for lifelong learning.

In design and technology, learners should work in contexts that allow them to make decisions based on the values that underpin society, helping them become active and informed citizens. They should be made aware of human achievements and the big ideas that have shaped the world. They should be encouraged to be enterprising and innovative in their designing and making, while having regard for sustainability and environmental issues in the twenty-first century.

Key Stage 2

<u>Skills</u>

Designing

Pupils should be given opportunities to:
6. consider the safety, reliability and sustainability of their activities/products, e.g. consider how use or misuse of their products might cause injury, damage or poor health.

Making

Food

Pupils should be given opportunities to:
8. apply current healthy eating messages and consider nutritional needs when undertaking food preparation tasks.

<u>Range</u>

Pupils should be given opportunities to develop their design and technology capability through:
- tasks in which they learn about the responsible use of materials, considering issues of sustainability.

Health and safety

Pupils should be taught how to use tools/utensils and equipment safely and to consider the hazards and risks in their activities.

They should be made aware of the impact on their health and safety of certain behaviour.

Key Stage 3

<u>Skills</u>

Making

Pupils should be given opportunities to:

Food

8. apply current healthy eating messages in relation to the nutritional needs of different groups in society and consider issues of sustainability in order to make informed choices when planning, preparing and cooking meals or products

Resistant materials and textiles

15. consider issues of sustainability when choosing and using materials.

<u>Range</u>

Pupils should be given opportunities to develop their design and technology capability through:
*   activities in which they learn about the responsible use of materials considering issues of sustainability.

Health and safety

Pupils should be taught how to use tools/utensils and equipment safely and to consider the hazards and risks in their activities.

They should be able to follow instructions to control risk to themselves and others, e.g. electrical tools/utensils, rotating machinery, sewing machines. When designing and making, pupils should take account of user safety, e.g. the build quality of products, how hygiene standards should be maintained in the production of a food product.

They should be made aware of the impact on their health and safety of certain behaviour, e.g. healthy eating.

Careers and the world of work

Schools should provide opportunities, where appropriate, for learners aged 11–19 to develop their awareness of careers and the world of work and how their studies contribute to their readiness for a working life.

Design and technology contributes to learners' awareness of careers and the world of work by providing opportunities for them to understand how consumer products and services are developed and brought to the marketplace and by raising their awareness of the range and diversity of careers associated with manufacturing in the wider world. Design and technology also allows learners to engage with the design and manufacturing technologies that are increasingly used in the workplace.

Key Stage 3

Range

Pupils should be given opportunities to develop their design and technology capability through:
- reflecting on the work of designers, inventors, architects and chefs, including those from Wales.

Health and safety

Pupils should be taught how to use tools/utensils and equipment safely and to consider the hazards and risks in their activities.

They should be able to follow instructions to control risk to themselves and others, e.g. electrical tools/utensils, rotating machinery, sewing machines. When designing and making, pupils should take account of user safety, e.g. the build quality of products, how hygiene standards should be maintained in the production of a food product.

They should be made aware of the impact on their health and safety of certain behaviour, e.g. healthy eating.