Design and Technology at Bardsey Primary School

Vision

Our Design Technology curriculum is based on the planning provided by the Design Technology Association. This program enables us as a school to plan and teach successful DT projects each term that cover the National Curriculum requirements. Through our teaching, pupils are given the opportunity to design, create and evaluate functional products in a range of different projects, and in a variety of different contexts with users and purposes in mind. Each term's project addresses a particular aspect of the subject. At KS1, these are *mechanisms*, *structures*, *food* and *textiles*; and at KS2 are *mechanical systems*, *electrical systems*, *structures*, *food* and *textiles*.

National Curriculum

The National Curriculum for Design Technology in Key Stages 1 and 2 can be found using the links below. This highlights the programme of study both statutory and non-statutory objectives for each Key Stage.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/239041/PRIMARY_national_curriculum_-_Design_and_technology.pdf

EYFS Curriculum

Please use the link below to learn more about the content of the Early Years Curriculum.

https://www.foundationyears.org.uk/files/2012/03/Development-Matters-FINAL-PRINT-AMENDED.pdf

The following sections of the document link to objectives related to Design Technology:

- Expressive Arts and Design: Being Imaginative
- Expressive Arts and Design: Exploring and Using Media and Materials
- Physical Development: Health and Handling
- Physical Development: Moving and Handling
- Understanding the World: Technology

Intent

Our Design and Technology curriculum intends to:
- Inspire children to solve relevant, real life problems and create innovative designs through a broad range of practical experiences in a variety of different contexts.
- Provide children with coherently planned sequences of lessons to ensure that the knowledge, understanding and skills required in the national curriculum is covered.
- Give opportunities for children to critically evaluate existing products and also to be creative when designing solutions to problems.
- Progressively build on skills and knowledge in technology including reflection, evaluation, making improvements, designing and creating solutions as children move through school.

Implementation

Progression

An underlying principle of the design and technology framework is that pupils' learning should be developed cumulatively. This means that learning from previous key stages will be revisited in teachers' planning and practice, but used in a more sophisticated way in subsequent key stages.

Teaching

At Bardsey we follow the 'Design, Make, Evaluate' approach to the teaching of DT, as outlined in the National Curriculum Programmes of Study document. The content of our DT curriculum is based on the planning provided by the Design Technology Association. At KS1, these are *mechanisms*, *structures*, *food* and *textiles*; and at KS2 are *mechanical systems*, *electrical systems*, *structures*, *food* and *textiles*. During DT sessions, children are encouraged to be inquisitive about the way products work. We encourage both asking and answering questions in order to deepen children's understanding of product and product design. They will use market research to inform their designs and, as they move up through the school, will be encouraged to draw detailed designs and make prototypes in order to refine their designs before creating their final piece. Whilst making their products, staff will guide them through the technical skills they will require, modelling good practice and highlighting safety considerations with the children. Through the evaluation stage of our 'Plan, Make, Evaluate' approach, children are encouraged to reflect upon their final products, considering how they could have altered their design or techniques to impact the overall appearance and usability of their product.

Key Knowledge and Vocabulary

The acquisition of key scientific knowledge is an integral part of our DT lessons. Linked knowledge organisers and displays enable children to learn and retain the important, useful and powerful vocabulary and knowledge contained within each unit. Children are encouraged to use this subject-appropriate vocabulary and language during discussions in lessons, and especially when planning and evaluating products. Our curriculum is based on the idea that long-term learning is built upon repetition of prior knowledge and we allow opportunities for children to come back to and re-visit previous learning to embed this knowledge in the long-term memory. Key technological knowledge and concepts are re-visited through short recall quizzes which assess and revise children's knowledge of prior learning from different units completed in previous terms and years.

Independent Learning

In DT, children are encouraged to ask questions and find solutions in order to solve practical problems. Children will often work collaboratively in the subject but will gain more and more independence especially in planning and evaluating products as they move through school.

High Quality Resources

Children will access resources to acquire learning through relevant practical equipment, textbooks and digital technology. Children have access to quality tools for completing construction tasks, preparing food, textiles and electrical systems.

Fieldwork and Outdoor Learning

Across both key stages, children have a range of opportunities to experience DT through practical engaging tasks beyond the classroom. Our school grounds are utilized as much as possible for lessons, enabling children to develop practical technological knowledge for appropriate tasks.

Educational Visits to enhance their cultural capital

Where applicable, links to DT will be made to develop the children's learning.

CPD

Continuous training is provided to ensure teacher skill and knowledge is developed to teach the subject with confidence and accuracy.

Impact

The impact and measure of our DT curriculum is that pupils:
- Move on to Key Stage 3 having met or exceeded the expected outcomes for Design Technology as outlined in the National Curriculum.
- Are inspired to ask questions, solve problems and are excited about Design Technology.
- See the relevance of what they learn in lessons to real-life situations and contexts.
- Recognise the importance of technology in the wider world.

Leadership, Assessment and Feedback

Due to the practical nature of many design and technology tasks, evidence of work undertaken by children can be in the form of teacher's notes or as a photographic record. Teachers are required to assess children's knowledge, understanding and skills in design and technology by making observations of the children working during lessons. As part of our assessment for learning process (and in line with our school's assessment policy), children will receive both verbal and written feedback in order to aid progress in the subject. Children are also encouraged to be critical of their own work, highlighting their own next steps.

Design and Technology Progression Framework Key Stages 1 and 2

Designing	Key Stage 1	Key Stage 2
Understanding contexts, users and purposes	Across KS1 pupils should: • work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment • state what products they are designing and making • say whether their products are for themselves or other users • describe what their products are for • say how their products will work • say how they will make their products suitable for their intended users • use simple design criteria to help develop their ideas	Across KS2 pupils should: • work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment • describe the purpose of their products • indicate the design features of their products that will appeal to intended users • explain how particular parts of their products work In early KS2 pupils should also: • gather information about the needs and wants of particular individuals and groups • develop their own design criteria and use these to inform their ideas In late KS2 pupils should also: • carry out research, using surveys, interviews, questionnaires and web-based resources • identify the needs, wants, preferences and values of particular individuals and groups • *develop a simple design specification to guide their thinking*
Generating, developing, modelling and communicating ideas	Across KS1 pupils should: • generate ideas by drawing on their own experiences • use knowledge of existing products to help come up with ideas • develop and communicate ideas by talking and drawing • model ideas by exploring materials, components and construction kits and by making templates and mock-	Across KS2 pupils should: • share and clarify ideas through discussion • model their ideas using prototypes and pattern pieces • use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • use computer-aided design to develop and communicate their ideas In early KS2 pupils should also: • generate realistic ideas, focusing on the needs of the user • *make design decisions that take account of the availability of resources* In late KS2 pupils should also:

Making	Key Stage 1	Key Stage 2
Planning	Across KS1 pupils should: • *plan by suggesting what to do next* • select from a range of tools and equipment, *explaining their choices* • select from a range of materials and components according to their characteristics	Across KS2 pupils should: • select tools and equipment suitable for the task • *explain their choice of tools and equipment in relation to the skills and techniques they will be using* • select materials and components suitable for the task • explain their choice of materials and components according to functional properties and aesthetic qualities In early KS2 pupils should also: • *order the main stages of making* In late KS2 pupils should also: • *produce appropriate lists of tools, equipment and materials that they need* • *formulate step-by-step plans as a guide to making*
Practical skills and techniques	Across KS1 pupils should: • follow procedures for safety and hygiene • use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components • measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design	Across KS2 pupils should: • follow procedures for safety and hygiene • use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components In early KS2 pupils should also: • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy In late KS2 pupils should also: • accurately measure, mark out, cut and shape materials and components • accurately assemble, join and combine materials and components • accurately apply a range of finishing techniques, including those from art and design • *use techniques that involve a number of steps* • demonstrate resourcefulness when tackling practical problems

Design and Technology Progression Framework Key Stages 1 and 2

Evaluating	Key Stage 1	Key Stage 2
Own ideas and products	Across KS1 pupils should: • talk about their design ideas and what they are making • make simple judgements about their products and ideas against design criteria • *suggest how their products could be improved*	Across KS2 pupils should: • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work In early KS2 pupils should also: • refer to their design criteria as they design and make • use their design criteria to evaluate their completed products In late KS2 pupils should also: • critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make • *evaluate their ideas and products against their original design specification*
Existing products	Across KS1 pupils should explore: • what products are • who products are for • what products are for • how products work • how products are used • where products might be used • what materials products are made from • what they like and dislike about products	Across KS2 pupils should investigate and analyse: • how well products have been designed • how well products have been made • why materials have been chosen • what methods of construction have been used • how well products work • how well products achieve their purposes • how well products meet user needs and wants In early KS2 pupils should also investigate and analyse: • who designed and made the products • where products were designed and made • when products were designed and made • whether products can be recycled or reused In late KS2 pupils should also investigate and analyse: • how much products cost to make • how innovative products are • how sustainable the materials in products are • what impact products have beyond their intended purpose
Key events and individuals	Not a requirement in KS1	Across KS2 pupils should know: • about inventors, designers, engineers, chefs and manufacturers who have developed

Technical knowledge	Key Stage 1	Key Stage 2
Making products work	Across KS1 pupils should know: • about the simple working characteristics of materials and components • about the movement of simple mechanisms such as levers, sliders, wheels and axles • how freestanding structures can be made stronger, stiffer and more stable • *that a 3-D textiles product can be assembled from two identical fabric shapes* • *that food ingredients should be combined according to their sensory characteristics* • *the correct technical vocabulary for the projects they are undertaking*	Across KS2 pupils should know: • how to use learning from science to help design and make products that work • how to use learning from mathematics to help design and make products that work • that materials have both functional properties and aesthetic qualities • *that materials can be combined and mixed to create more useful characteristics* • that mechanical and electrical systems have an input, process and output • *the correct technical vocabulary for the projects they are undertaking* In early KS2 pupils should also know: • how mechanical systems such as levers and linkages or pneumatic systems create movement • how simple electrical circuits and components can be used to create functional products • how to program a computer to control their products • how to make strong, stiff shell structures • *that a single fabric shape can be used to make a 3D textiles product* • *that food ingredients can be fresh, pre-cooked and processed* In late KS2 pupils should also know: • how mechanical systems such as cams or pulleys or gears create movement • how more complex electrical circuits and components can be used to create functional products • how to program a computer to monitor changes in the environment and control their products • how to reinforce and strengthen a 3D framework • *that a 3D textiles product can be made from a combination of fabric shapes* • *that a recipe can be adapted by adding or substituting one or more ingredients*

Cooking and nutrition	Key Stage 1	Key Stage 2
Where food comes from	Across KS1 pupils should know: • that all food comes from plants or animals • that food has to be farmed, grown elsewhere (e.g. home) or caught	Across KS2 pupils should know: • that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world In late KS2 pupils should also know: • that seasons may affect the food available • how food is processed into ingredients that can be eaten or used in cooking
Food preparation, cooking and nutrition	Across KS1 pupils should know: • how to name and sort foods into the five groups in The eatwell plate • that everyone should eat at least five portions of fruit and vegetables every day • how to prepare simple dishes safely and hygienically, without using a heat source • how to use techniques such as cutting, peeling and grating	Across KS2 pupils should know: • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking In early KS2 pupils should also know: • that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate • that to be active and healthy, food and drink are needed to provide energy for the body In late KS2 pupils should also know: • *that recipes can be adapted to change the appearance, taste, texture and aroma* • that different food and drink contain different substances – nutrients, water and fibre – that are needed for health

Bardsey Primary Curriculum

Design Technology						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Reception		Christmas Cards and Calendars Salt dough Christmas Ornaments				
Year 1	**Textiles** – Fabric Faces Puppets		**Mechanisms –** Sliders and Levers Moving Pictures	**Food –** The Tiger's Tea Party		
Year 2	Designing and making kites				Mechanisms, wheels and axles	Structures – designing and making a drawbridge
Year3	Food – Healthy and varied diet The Great Bread Bake Off		Mechanisms – Pneumatics Juggling Balls	Textiles – 2D shape to 3D product	Mechanical Posters	
Year 4	Model River System	Electrical systems – Simple circuits and switches	Model Volcanoes	Mechanisms – Levers and linkages	Viking Shields	Structures – Shell structures
Year 5	Food – Celebrating culture and seasonality	Structures – Frame Structures	Mechanical Systems – Pulleys or gears		Textiles – Combining different fabric shapes	
Year 6		Mechanical Systems	Electrical Systems	Electrical Systems		Textiles – Using