Design Technology

Intent

**What is Design Technology?**

We inspire pupils to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation and evaluation. We want our pupils to take risks through drafting design concepts, modelling and testing and to be reflective learners who evaluate their work and the work of others. Throughout the process our children are implementing the school values, communication, collaboration, listening and thinking. We aim to build an awareness of the impact of design and technology on our lives encouraging our pupils to be resourceful enterprising citizens who will have the skills to contribute to future design advancements.

**Wider school context**

At Huntingdon Academy, attainment on entry to Foundation One is well below the national average. According to the Indices of Deprivation, 95.7% of children come from 30% of the poorest households nationally. The school’s IDACI figure of 0.59, makes the school one of the top 20% most deprived schools in the country. Over half (57.5%) of children are classed as Free School Meals under the new classification (FSM at any point in the last six years). This is nearly three times the national average value.

Huntingdon Academy has an increasing number of children who are asylum seekers, many of these children are at a very early stage of English acquisition. Presently, there are 32 different languages spoken by children from ethnic minorities - 41% of children speak English as an additional language. Huntingdon Academy has 13 out of 17 possible ethnic groups, the average number of groups for this phase of education is 9.

***Context of Design Technology at Huntingdon Academy***

At Huntingdon Academy children need to be well equipped with every day skills such as; changing a lightbulb or simple fixes of everyday household equipment. Children at Huntingdon, through a cross-curricular and skills-based teaching of Design technology will be well prepared for an constantly evolving technological world. Design technology is a practical subject which allows for the exploration of tools and materials. It is essential that children at Huntingdon Academy have a clear understanding and skill set to use a range of tools safely and appropriately. It is also essential that the children of Huntingdon academy understand the importance of a balanced and healthy diet and know how to prepare simple dishes safely and confidently so they can move into their future careers and lives with such essential living skills. Each area of DT is broken down and specific skills are taught in order to develop knowledge and understanding of a variety of techniques. Our school builds on children’s self-esteem and confidence and celebrates all successes.

**The vision for Design Technology at Huntingdon Academy**

• Be an inspiring, rigorous and practical subject.

• Use 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.

• acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art.

• learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens.

• Evaluate past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world.

• Provide high-quality design and technology education, in turn making an essential contribution to the creativity, culture, wealth and well-being of the St Ann’s

The national curriculum 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 and to know the importance of a balanced diet.

**Implementation**

***End points***

***EYFS***

By the end of foundation skills children would have begun to develop their skills and knowledge to help make sense of the world around them. This learning forms the foundations for later Design technology. Children will begin to ask questions, explore how things work, investigate and use a variety of construction materials and tools. Children will leave foundation being able to pick the right tool for the ‘job’ and be able to use such tools and materials safely. Children’s handling and making skills will also be developing. Children will have been provided with a range of experiences that encourage observation, problem solving, critical thinking, using both indoor and outdoor experiences linked to the children’s interests/topics.

***Key Stage One***

***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

**Cooking and nutrition**

* use the basic principles of a healthy and varied diet to prepare dishes
* understand where food comes from

**Key Stage two- Children who attend Huntingdon Academy will leave knowing how to...**

Huntingdon Academy pupils are taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making.

**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 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

**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.

**Cooking 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.

***High quality teaching of Design and Technology should include these 6 principles-***

o **User**– pupils should consider who their products are for

o **Purpose** – pupils should decide which tasks their products will perform

o **Functionality** – pupils should think about how their products will work

o **Design Decisions**– pupils should have opportunities to make informed choices

o **Innovation** – pupils should have scope to be original with their thinking

o **Authenticity** – pupils should design and make products that are real, believable and can be evaluated through use

***Oracy***

**The teaching of design technology lends itself to the following opportunities.**

* to communicate design ideas
* to express and justify choice of tools and materials
* to present findings to a group of people
* to evaluate products and discuss ideas on how to improve products that exist or that has been made
* to work co-operatively in groups, listening and putting into action other peoples ideas and designs
* to debate and discuss choices made around a product and its use.

***Cooking and nutrition must be taught by each year group every academic year.***

Children will be given the opportunity to progress with their use of tools. A year 6 child should not be learning how to cut with scissors. Tools need to be appropriate for the year group/key stage and the use of them to be developed and the ways in which they are used need to differ. This information can be found in the appendix from two documents; Progression of conceptual knowledge’ and ‘Progression of tools’.

Children also need to be given opportunity to use appropriate vocabulary and again for this to progress through the year group. In the appendix, there is a ‘Progression of vocabulary’ document, which highlights key vocabulary focused around 2 themes; skills and knowledge. These need to be used alongside teaching.

***It is also essential and to be monitored by leaders that Health and safety standards/training are being adhered to.***

Sequence of DT lessons design-



***Inclusion***

* Design technology will support equality of opportunity and inclusion to all learners.
* All pupils will have equal opportunity to reach their full potential across the Design technology curriculum regardless of their race, gender, cultural background or ability. Class teachers will be responsible for planning activities that are differentiated and suitably challenging to meet the needs of all children, enabling access to the study of Design technology.
* Children with SEND will be taught design technology through the EQUALS curriculum. Children will have access to a range of tools and materials, with a focus on fine motor skills and the use of tools in an appropriate way. Children will have the opportunity to explore and use different products to discover how they work. With the use of different materials or construction kits, children will assemble, join and stick together materials and make them stronger and stiffer. Children will test out their products and evaluate what they have made.

***Impact***

*‘Technology makes possibilities. Design makes solutions’. Maeda*

* Understand the functional and aesthetic properties of a range of materials and resources.
* Understand how to use and combine tools to carry out different processes for shaping, decorating and manufacturing products.
* Build and apply a repertoire of skills, knowledge and understanding to produce high quality, innovative outcomes, including models, prototypes, CAD, and products to fulfil the needs of users, clients, and scenarios.
* Understand and apply the principles of healthy eating, diets, and recipes, including key processes, food groups and cooking equipment.
* Have an appreciation for key individuals, inventions, and events in history and of today that impact our world.
* Self – evaluate and reflect on learning at different stages and identify areas to improve.
* Meet the end of key stage expectations outlined in the national curriculum for design and technology.
* They will have learnt skills they will use for life