Gainford CE Primary and Preschool
Design Technology

How design technology links to the ethos and values of Gainford CE Primary School

At Gainford CE Primary we see the ultimate purpose of education as the promotion of developing young people who can flourish in all areas of their lives-'Together we love learn and flourish' Through our DT curriculum we aim to help children develop their creativity, understand their culture and contribute towards the well-being of the nation (DFE, 2014).

A character education for design technology (CAUGHT)

Through design technology the children can learn to take risks and be **courageous,** imaginative, innovative, enterprising and accomplished people. Through the **honest** evaluation of past and present design and technology, they can develop a critical understanding of its impact on daily life and the wider world (DFE, 2014). We aim to teach the children to be **supportive** and **caring** towards each other by giving them opportunities to work together on projects or by **honestly** evaluating their peers' creations, thinking of ways they could be improved. The children will develop their understanding of the needs of others in order to design **inclusive** products and also develop their knowledge of the sustainability of products and where they come from, reinforcing their **respect** for and **thankfulness** for the environment.

Our vision for Design Technology

At Gainford we intend to provide lots of opportunities for children to learn, apply and strengthen essential skills they need to design, make, and evaluate a product for a specified purpose. We hope that the children can be **courageous** to try new ways of working and to draw on a broad range of skills and subject knowledge from other subjects such as maths, science, computing and art in order to design and create products that will solve real and relevant problems in a variety of contexts; becoming **inclusive** by considering not just their own needs and values, but those of others too.

How do we teach design technology at Gainford CE Primary and Preschool? (TAUGHT)

At Gainford Primary DT will be taught as a discrete subject and through other subjects such as science, history, geography, ICT. In Foundation Stage, the children develop essential basic skills in design and technology which prepares them for the transition into Year 1. This is by

the teacher creating many opportunities for the children to carry out DT related activities across all areas of learning.

There are 5 categories that the skills in the curriculum are split into: Structures, Mechanisms, Textiles, Cooking and Nutrition and Electrical Systems[1]. These in turn will be taught in a rolling programme[2] across Key Stage 1, Lower Key Stage 2 and Upper Key Stage 2 to ensure the children gain the skills they need and can be adapted to work within topics and mixed year groups.

From Year 1 upwards, the children will engage in 3 DT units a year which will involve the children:

- **Designing**

The children will:

- Explore products linked to their project.
- Carry our research regarding the product they are going to make to they can use this to support the design of their product.
- Draw/sketch their design and annotate this with information about it such as what features they have included and what materials, tools and skills they will need to practise before making the product.

- **Making**

The children will then make their product.

- **Evaluating**

The children will be given the opportunity to not only evaluate the effectiveness of their product but also the skills they have used to make it.

- **Technical Knowledge/Skills**

The children will engage in a practical activity of practising the technical knowledge or skill they will need to use when making their product. This could be a new skill or one previously learnt but may still require more practise.

- **Cooking and Nutrition**

The children will be given the opportunity to not only explore a variety of different foods and where they come from, but also learn about the principles off a healthy and varied diet. They will also engage in the practical element of designing and producing a variety of dishes using a range of cooking techniques.

Design technology skills and knowledge taught for each year group

By the end of Key Stage One, it is expected that the children will be able to:

- Explain their ideas through talking, drawing, ICT and templates.

[1] KS2 category only
[2] See exemplar Long Term Plan

- Select the tools, materials and techniques they need according to their characteristics.
- Evaluate their ideas and products against a specified design criterion.
- Explain how structures can be made stronger and use mechanisms such as wheels and levers in their products.
- Understand where their food comes from and how to plan for a healthy and varied diet.

By the end of Key Stage Two, it is expected that the children will be able to:

- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
- Select from a wider range of tools, materials and techniques they need according to their functional properties and aesthetic properties.
- Evaluate their ideas and products against their own design criteria, take on board the views of others to improve their work.
- Use their knowledge of how structures can be made stronger, mechanisms (such as pulleys, gears etc) and electrical systems to build more complex structures.
- Use their knowledge to prepare and cook a variety of dishes using a range of techniques.
- Understand when, where and how a variety of ingredients are grown, nurtured, caught, manufactured etc

See progression tables attached for breakdown of skills for each year group.

Measuring Impact (SOUGHT)

Evidence of children's knowledge and skills will be found through:

- Children's work in books
- End product
- Displays
- Language they use verbally

Progression Table:

Topic	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Structure		I can have my own ideas and plan what to do next. I can explain what I want to do and describe how I may do it. I can describe design using pictures, words, models, diagrams, begin to use ICT. I can explain what I am making and why it fits the purpose. I can make suggestions as to what I need to do next. I can choose best tools and materials, and explain choices. I can describe what went well, thinking about design criteria I can talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion I can evaluate how good existing products are I can talk about what I would do differently if I were to do it again and why I can measure materials. I can describe some different characteristics of materials. I can join materials in different ways. I can use joining, rolling or folding to make it stronger. I can use own ideas to try to make product stronger. This unit provides ample opportunities to reflect and consider: • How we can be **inspired** by things that have been created and how we can **inspire** others with our own ideas. • Being **honest** in our evaluations and with ourselves if something hasn't gone quite to plan. Being **caring** towards others by sharing tools/equipment	I can begin to research others' needs I can show design meets a range of requirements I can describe purpose of product I can follow a given design criteria I have at least one idea about how to create product I can describe design using an accurately labelled sketch and words I can make design decisions begin to use computers to show design I can select suitable tools/equipment, explain choices; begin to use them accurately I can select appropriate materials, fit for purpose. I can work through plan in order I can consider how good product will be I can begin to measure, mark out, cut and shape materials/components with some accuracy I can begin to assemble, join and combine materials and components with some accuracy I can begin to apply a range of finishing techniques with some accuracy I can look at design criteria while designing and making I can use design criteria to evaluate finished product I can say what I would change to make design better I can begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose I can begin to understand by whom, when and where products were designed I can learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products I can use appropriate materials I can work accurately to make cuts and holes I can join materials		I can begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose I can create own design criteria I can have a range of ideas I can produce a logical, realistic plan and explain it to others. I can use cross-sectional planning and annotated sketches I can make design decisions considering time and resources. I can clearly explain how parts of product will work. I can model and refine design ideas by making prototypes and using pattern pieces. I can use computer-aided designs I can use selected tools/equipment with good level of precision I can produce suitable lists of tools, equipment / materials needed I can select appropriate materials, fit for purpose; explain choices, considering functionality I can create and follow detailed step-by-step plan I can explain how product will appeal to an audience I can mainly accurately measure, mark out, cut and shape materials/components I can mainly accurately assemble, join and combine materials/components I can mainly accurately apply a range of finishing techniques I can use techniques that involve a small number of steps I can begin to be resourceful with practical problems I can evaluate ideas and finished product against specification, considering purpose and appearance. I can evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose I can research how sustainable materials are I can talk about some key inventors / designers / engineers / chefs /	

			I can begin to make strong structures This unit provides ample opportunities to reflect and consider: • How we can be **inclusive** by thinking of others' needs. • How we can be **inspired** by the work of others. Being **honest** in our evaluations and with ourselves if something hasn't gone quite to plan.		manufacturers of ground-breaking products I can measure carefully to avoid mistakes I can attempt to make product strong I can continue working on product even if original didn't work I can make a strong, stiff structure This unit provides ample opportunities to reflect and consider: • How we can be **inclusive** by thinking of others' needs. • How we can be **inspired** by the work of others. • Being **honest** in our evaluations and with ourselves if something hasn't gone quite to plan. • **Caring** for the environment and being **honest** about our use of materials/recycling. **Nurturing** an understanding of our impact on the planet.	
Mechanism	I have my own ideas I can explain what I want to do I can explain what my product is for, and how it will work I can use pictures and words to plan, begin to use models I can design a product for myself following design criteria I can research similar existing products I can explain what I'm making and why I can consider what I need to do next I can select tools/equipment to cut, shape, join, finish and explain choices I can choose suitable materials and explain choices I can try to use finishing techniques to make product look good I can talk about my work, linking it to what I was asked to do I can talk about existing products considering: use, materials, how they work, audience, where they might be used I can talk about existing products, and say what is and isn't good I can talk about things that other people have made	I can have my own ideas and plan what to do next I can explain what I want to do and describe how I may do it I can explain purpose of product, how it will work and how it will be suitable for the user I can describe design using pictures, words, models, diagrams, begin to use ICT I can design products for myself and others following design criteria I can choose best tools and materials, and explain choices. I can use knowledge of existing products to produce ideas. I can explain what I am making and why it fits the purpose. I can make suggestions as to what I need to do next. I can join materials / components together in different ways. I can describe which tools I'm using and why	I can begin to research others' needs I can follow a given design criteria I have at least one idea about how to create product I can describe design using an accurately labelled sketch and words I can make design decisions I can explain how product will work I can make a prototype I can begin to use computers to show design I can select suitable tools/equipment, explain choices; begin to use them accurately I can select appropriate materials, fit for purpose. I can work through plan in order I can consider how good product will be I can begin to assemble, join and combine materials and components with some accuracy I can begin to apply a range of finishing techniques with some accuracy I can look at design criteria while designing and making I can use design criteria to evaluate finished product		I can use internet and questionnaires for research and design ideas I can take a user's view into account when designing I can create own design criteria I can have a range of ideas I can produce a logical, realistic plan and explain it to others. I can make design decisions considering time and resources. I can clearly explain how parts of product will work. I can model and refine design ideas by making prototypes and using pattern pieces. I can use computer-aided designs I can use selected tools/equipment with good level of precision I can produce suitable lists of tools, equipment / materials needed I can create and follow detailed step-by-step plan I can explain how product will appeal to an audience I can mainly accurately measure, mark out, cut and shape materials/components I can mainly accurately assemble, join and combine materials/components	

	I can begin to talk about what could make product better I am beginning to use levers or slides This unit provides ample opportunities to reflect and consider: • How we can be **inspired** by things that have been created and how we can **inspire** others with our own ideas. • Being **caring** towards others by sharing tools/equipment • Being **honest** in our evaluations and with ourselves if something hasn't gone quite to plan. Being **nurturing** towards others by listening to their ideas and making suggestions.	I can choose suitable materials and explain choices depending on characteristics. I can describe what went well, thinking about design criteria I can talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion I can evaluate how good existing products are I can talk about what I would do differently if I were to do it again and why I can use levers or sliders I am beginning to understand how to use wheels and axles. This unit provides ample opportunities to reflect and consider: • How we can be **inspired** by things that have been created and how we can **inspire** others with our own ideas. • Being **honest** in our evaluations and with ourselves if something hasn't gone quite to plan. Being **caring** towards others by sharing tools/equipment	I can say what I would change to make design better I can begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose I can begin to understand by whom, when and where products were designed I can learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products I can select appropriate tools / techniques I can alter product after checking, to make it better I can begin to try new/different ideas I can use simple lever and linkages to create movement This unit provides ample opportunities to reflect and consider: • How we can be **inclusive** by thinking of others' needs. • How we can be **inspired** by the work of others. Being **honest** in our evaluations and with ourselves if something hasn't gone quite to plan.		I can mainly accurately apply a range of finishing techniques I can use techniques that involve a small number of steps I can evaluate ideas and finished product against specification, considering purpose and appearance. I can evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose I can test and evaluate final product I can begin to evaluate how much products cost to make and how innovative they are I can research how sustainable materials are I can talk about some key inventors / designers / engineers / chefs / manufacturers of ground-breaking products I can select most appropriate tools / techniques I can explain alterations to product after checking it I can grow in confidence about trying new / different ideas. I can use levers and linkages to create movement I can use pneumatics to create movement • **honest** in our plans/decisions/evaluations and with ourselves if something hasn't gone quite to plan. • Being **nurturing** towards others by listening to their ideas and making suggestions. • How we can be **inclusive** by thinking of others' needs. • How we can be **inspired** by the work of others. **Caring** for the environment and being **honest** about our use of materials/recycling.	
Textiles	I have my own ideas I can use pictures and words to plan, begin to use models I can design a product for myself following design criteria I can explain what I'm making and why			I can use research for design ideas I can show design meets a range of requirements and is fit for purpose I can have at least one idea about how to create product and suggest improvements for design.		I can draw on market research to inform design I can use research of user's individual needs, wants, requirements for design I can identify features of design that will appeal to the intended user

	I can select tools/equipment to cut, shape, join, finish and explain choices I can measure, mark out, cut and shape, with support I can choose suitable materials and explain choices I can try to use finishing techniques to make product look good I can talk about my work, linking it to what I was asked to do I can talk about existing products considering: use, materials, how they work, audience, where they might be used I can begin to talk about what could make product better I can measure, cut and join textiles to make a product, with some support I can choose suitable textiles This unit provides ample opportunities to reflect and consider: • How we can be **inspired** by things that have been created and how we can **inspire** others with our own ideas. • Being **honest** in our evaluations and with ourselves if something hasn't gone quite to plan. • Being **caring** towards others by sharing tools/equipment			I can produce a plan and explain it to others I can include an annotated sketch I can make and explain design decisions considering availability of resources I can select appropriate materials, fit for purpose; explain choices I can realise if product is going to be good quality I can measure, mark out, cut and shape materials/components with some accuracy I can assemble, join and combine materials and components with some accuracy I can apply a range of finishing techniques with some accuracy I can refer to design criteria while designing and making I can use criteria to evaluate product I can begin to explain how I could improve original design I can evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose I can discuss by whom, when and where products were designed I can research whether products can be recycled or reused I can know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products I can think about user when choosing textiles I can think about how to make product strong I can begin to devise a template I can explain how to join things in a different way I can understand that a simple fabric shape can be used to make a 3D textiles project This unit provides ample opportunities to reflect and consider: • How we can be **inclusive** by thinking of others' needs. • How we can be **inspired** by the work of others.		I can create own design criteria and specification I can come up with innovative design ideas I can follow and refine a logical plan. I can use annotated sketches, cross-sectional planning and exploded diagrams I can make design decisions, considering, resources and cost I can use computer-aided designs I can produce suitable lists of tools, equipment, materials needed, considering constraints I can select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics I can create, follow, and adapt detailed step-by-step plans I can explain how product will appeal to audience; make changes to improve quality I can accurately measure, mark out, cut and shape materials/components I can accurately assemble, join and combine materials / components I can accurately apply a range of finishing techniques I can use techniques that involve a number of steps I can keep checking design is best it can be. I can evaluate ideas and finished product against specification, stating if it's fit for purpose I can do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose I can evaluate how much products cost to make and how innovative they are I can research and discuss how sustainable materials are I can discuss some key inventors / designers / engineers / chefs / manufacturers of ground-breaking products I can think about user's wants/needs and aesthetics when choosing textiles

				• Being **honest** in our evaluations and with ourselves if something hasn't gone quite to plan. **Caring** for the environment and being **honest** about our use of materials/recycling.		I can make product attractive and strong I can make a prototype I can use a range of joining techniques I can think about how product might be sold I can think carefully about what would improve product I can understand that a single 3D textiles project can be made from a combination of fabric shapes. This unit provides ample opportunities to reflect and consider: • How we can be **inclusive** by thinking of others' needs. • How we can be **inspired** by the work of others and **inspire** others with our own ideas. • Being **honest** in our evaluations and with ourselves if something hasn't gone quite to plan. • **Caring** for the environment and being **honest** about our use of materials/recycling. **Nurturing** an understanding of our impact on the planet.
Electricity	N/A	N/A		I can begin to create own design criteria I can have at least one idea about how to create product and suggest improvements for design. I can produce a plan and explain it to others I can say how realistic plan is. I can include an annotated sketch I can make and explain design decisions considering availability of resources I can explain how product will work I can make a prototype I can begin to use computers to show design I can select suitable tools and equipment, explain choices in relation to required techniques and use accurately I can select appropriate materials, fit for purpose; explain choices I can work through plan in order. I can realise if product is going to be good quality		I can use research of user's individual needs, wants, requirements for design I can identify features of design that will appeal to the intended user I can come up with innovative design ideas I can follow and refine a logical plan. I can use annotated sketches, cross-sectional planning and exploded diagrams I can clearly explain how parts of design will work, and how they are fit for purpose I can independently model and refine design ideas by making prototypes and using pattern pieces I can use selected tools and equipment precisely I can produce suitable lists of tools, equipment, materials needed, considering constraints I can select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics

				I can measure, mark out, cut and shape materials/components with some accuracy I can assemble, join and combine materials and components with some accuracy I can apply a range of finishing techniques with some accuracy I can refer to design criteria while designing and making I can use criteria to evaluate product I can begin to explain how I could improve original design I can discuss by whom, when and where products were designed I can know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products I can use number of components in circuit I can program a computer to control product This unit provides ample opportunities to reflect and consider: • Being **honest** in our decisions/evaluations and with ourselves if something hasn't gone quite to plan. How we can be **inspired** by the work of others		I can create, follow, and adapt detailed step-by-step plans I can explain how product will appeal to audience; make changes to improve quality I can accurately measure, mark out, cut and shape materials/components I can accurately assemble, join and combine materials / components I can accurately apply a range of finishing techniques I can use techniques that involve a number of steps I can be resourceful with practical problems I can evaluate quality of design while designing and making; is it fit for purpose? I can keep checking design is best it can be. I can evaluate ideas and finished product against specification, stating if it's fit for purpose I can test and evaluate final product; explain what would improve it and the effect different resources may have had I can do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose I can evaluate how much products cost to make and how innovative they are I can research and discuss how sustainable materials are I can consider the impact of products beyond their intended purpose I can discuss some key inventors / designers / engineers / chefs / manufacturers of ground-breaking products I can use different types of circuit in product I can think of ways in which adding a circuit would improve product I can program a computer to monitor changes in environment and control product

						This unit provides ample opportunities to reflect and consider: • How we can be **inclusive** by thinking of others' needs. • How we can be **inspired** by the work of others and **inspire** others with our own ideas. • Being **honest** in our evaluations and with ourselves if something hasn't gone quite to plan. • Being **nurturing** towards others by listening to their ideas and making suggestions. • **Caring** for the environment and being **honest** about our use of materials/recycling. **Nurturing** an understanding of our impact on the planet.
Cooking & Nutrition	I am beginning to understand that all food comes from plants or animals. I can explore the understanding that food has to be farmed, grown elsewhere (e.g. home) or caught. I am starting to understand how to name and sort foods into the five groups in 'The Eat well plate' I am beginning to understand that everyone should eat at least five portions of fruit and vegetables every day. I know how to prepare simple dishes safely and hygienically, without using a heat source. I know how to use techniques such as cutting, peeling and grating.	I understand that all food comes from plants or animals. I know that food has to be farmed, grown elsewhere (e.g. home) or caught. I understand how to name and sort foods into the five groups in 'The Eat well plate' I know that everyone should eat at least five portions of fruit and vegetables every day. I can demonstrate how to prepare simple dishes safely and hygienically, without using a heat source. I can demonstrate how to use techniques such as cutting, peeling and grating.	I am starting to 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. I understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. I am beginning to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. I am starting to understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate' I am beginning to know that to be active and healthy, food and drink are needed to provide energy for the body.	I understand 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. I understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. I know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. I know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate' I know that to be active and healthy, food and drink are needed to provide energy for the body.	I understand 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. I am beginning to understand that seasons may affect the food available. I understand how food is processed into ingredients that can be eaten or used in cooking. I know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. I am starting to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. I am beginning to understand that different food and drink contain different substances – nutrients, water and fibre – that are needed for health.	I 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. I understand that seasons may affect the food available. I understand how food is processed into ingredients that can be eaten or used in cooking. I know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. I understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. I know different food and drink contain different substances – nutrients, water and fibre – that are needed for health.

Exemplar Topic Plan:

	Year			
Key Stage 1	**1**	Textiles Stitches – puppets (History link to toys)	Mechanisms Sliders and levers - Moving pictures	Cooking & Nutrition Healthy Lunchbox
	2	Structures Freestanding structures (Science link to everyday materials topic)	Mechanisms Wheels and axles (History link)	Cooking & Nutrition
Lower Key Stage 2	**3**	Structures Shell Structures	Mechanisms Levers and Linkages or Pneumatics (possible Science link to forces topic)	Cooking & Nutrition (Geography/history link to country studied
	4	Textiles Link to history purses	Electrical Systems Simple circuits (science link)	Cooking & Nutrition
Upper Key Stage 2	**5**	Structures Frame Structures	Mechanisms Pulleys & Gears or Cams	Cooking & Nutrition Celebrating Seasonality & Culture – Soup using seasonal ingredients from different cultures
	6	Textiles	Electrical Systems Car Alarms	Cooking & Nutrition Bake a difference – summer FAIR