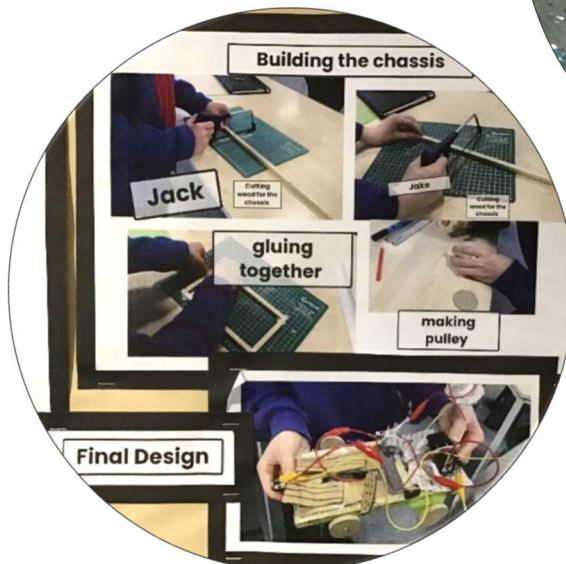




How we teach Design Technology



This document outlines: the intent and rationale behind our Design Technology curriculum, how it is delivered it and how we measure pupil progress.

At Godmanchester Bridge Academy, the Design Technology curriculum is aligned with our school values:

Inspire	Enjoy	Achieve
Children work with a clear purpose, addressing both real and imagined problems. There are opportunities to work both collaboratively and independently.	Children work in a variety of disciplines including textiles, structures, cooking, physical programming and electronics. They are empowered to make their own choices.	Children develop creative and technical skills that enable them to become effective problem-solvers. They can communicate their design solutions in a variety of ways.

At Godmanchester Bridge Academy we follow the Kapow Primary Design and technology scheme of work, which aims to inspire pupils to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation, and evaluation.

We want pupils to develop the confidence to take risks, through drafting design concepts, modelling, and testing and to be reflective learners who evaluate their work and the work of others. Through our scheme of work, we aim to build an awareness of the impact of design and technology on our lives and encourage pupils to become resourceful, enterprising citizens who will have the skills to contribute to future design advancements.

Our Design and technology scheme of work enables pupils to meet the end of key stage attainment targets in the National curriculum and the aims also align with those in the National curriculum. EYFS (Reception) units provide opportunities for pupils' to work towards the Development matters statements and the Early Learning Goals.



Implement

The Design and technology National curriculum outlines the three main stages of the design process: **design, make and evaluate**. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual, historical, and technical understanding required for each strand. Cooking and nutrition has a separate section, with a focus on specific principles, skills and techniques in food, including where food comes from, diet and seasonality.

The National curriculum organises the Design and technology attainment targets under four subheadings:

- Design
- Make
- Evaluate
- Technical knowledge

Our scheme has a clear progression of skills and knowledge within these strands and key areas across each year group.

Cooking and nutrition is given a particular focus in the National curriculum and we have made this one of our six key areas that pupils revisit throughout their time at Godmanchester Bridge Academy:

- | | |
|----------------------------------|---------------------------------|
| • Cooking and nutrition | • Textiles |
| • Mechanisms/ Mechanical systems | • Electrical systems (KS2 only) |
| • Structures | • Digital world (KS2 only) |

Through our Design and technology scheme, pupils respond to design briefs and scenarios that require consideration of the needs of others, developing their skills in the six key areas. Each of our key areas follows the design process (design, make and evaluate) and has a particular theme and focus from the technical knowledge or cooking and nutrition section of the curriculum. The scheme is a spiral curriculum, with key areas revisited again and again with increasing complexity, allowing pupils to revisit and build on their previous learning.

Lessons incorporate a range of teaching strategies from independent tasks, paired and group work including practical hands-on, computer-based and inventive tasks. This variety means that lessons are engaging and appeal to those with a variety of learning styles. Differentiated guidance is available for every lesson to ensure that lessons can be accessed by all pupils and opportunities to stretch pupils' learning are available when required. Knowledge organisers for each unit support pupils in building a foundation of factual knowledge by encouraging recall of key facts and vocabulary.

All Pupils:

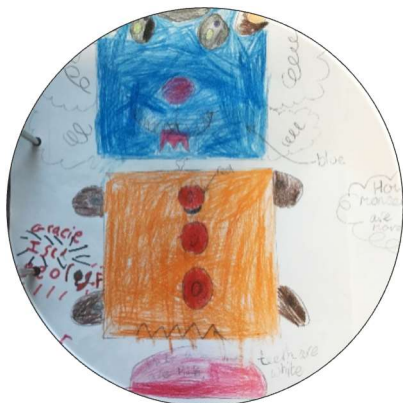
- access a differentiated curriculum designed by the subject leader that is appropriate for all but is also meaningful, challenging & ambitious.
- are provided a range of activities to engage them and allow them to effectively communicate their understanding.
- are closely monitored and supported pastorally to ensure their emotional wellbeing is prioritised.
- named on each lesson seating plan so that pupils are known to staff and we foster a feeling of each pupil having their own place in the community.
- record work in a variety of ways, allowing access to the curriculum through multi-sensory learning.
- are provided with subject knowledge organisers.
- are supported with their behaviour choices in a therapeutic environment, school use restorative practise so that pupils can reflect and be supported to meet the schools valued behaviour expectations.
- Experience effective questioning to deepen knowledge and understanding and provide challenge
- receive feedback in lessons that results in further progress across the curriculum.

Some Pupils Need:

- use of concrete and pictorial representations during teaching and when working independently to aid their understanding.
- clear vocabulary explanations and/or introductory vocabulary work to prepare for a task.
- targeted questioning to support pupils in answering questions both orally and in written work.
- one-to-one interaction and targeted intervention by the teacher or support staff.
- a specific seat in lessons to meet a sensory or a learning need.
- specific feedback.
- an effective blend of co-operative, independent and teacher-led activities to appropriately challenge and support.
- key words and vocabulary identified and discussed.
- sentence starter/writing frames a scaffolded lesson structure, e.g. additional modelling, more paired/ discussion work or increased mini-plenaries.
- extra support in a lesson from an additional adult so that the pupils needs, academic or pastoral, are effectively met.
- post teaching to address any misconceptions.

Specific Pupils Need:

- access to a quiet space to ensure they can be supported to meet their potential.
- additional support in lessons from an adult who is attuned to their individual pastoral and learning needs.
- bespoke timetables taking in to account their needs to ensure that they are taught in an environment that best supports their pastoral and learning needs.
- curriculum adaptations to allow for engagement through pupil interests (project focus or word problem context).
- additional support in practical lessons.
- a personalised learning pathway.



Implement

The impact of our Design Technology scheme can be constantly monitored through both formative and summative assessment opportunities. Each lesson includes assessing pupils against the learning objectives. Furthermore, each unit has a unit quiz and knowledge catcher which is used at the start and/ or end of the unit.

After the implementation of the Design Technology curriculum, pupils should leave Godmanchester Bridge Academy equipped with a range of skills to enable them to succeed in their secondary education and be innovative and resourceful members of society. The expected impact of following the Design Technology scheme of work is that children will:

- 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.
- Recognise where our decisions can impact the wider world in terms of community, social and environmental issues.
- 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.



Subject Map

Year	Unit 1	Unit 2	Unit 3
R	Structures: Junk Modelling	Textiles: Book marks	Structures: Boats
Substantive knowledge and disciplinary knowledge	Explore and learn about various types of permanent and temporary join. Pupils are encouraged to tinker using a combination of materials and joining techniques in the junk modelling area.	Develop and practise threading and weaving techniques using various materials and objects. Pupils apply their knowledge and skills to design and make their own bookmarks.	Explore what is meant by 'waterproof', 'floating' and 'sinking', then pupils experiment and make predictions with various materials to carry out a series of tests. They learn about the different features of boats and ships before investigating their shape and structures to build their own.
Diversity, enrichment & GBA adaptations	<i>Explore Michelle Reader (white female British Sculptor) Research Leo Sewell Junk Modelling Artist (white male American)</i>	<i>Explore the history of the bookmark from Victorian times versus modern-day styles</i>	<i>Explore Viking Long Boats, African Canoemen and Blangadeshi Fishing Boats</i>
1	Structures: Constructing a windmill	Textiles: Puppets	Food: Fruit and Vegetables
Substantive knowledge and disciplinary knowledge	Exploring and understanding basic structural engineering to develop a range of modelling skills using appropriate materials.	Exploring a range of different joining techniques and their different purposes, developing fine motor skills and idea generation linked to the brief.	Exploring a range of different fruit and vegetables and understanding the differences between them enabling informed choices to be formulated in producing a final product.
Diversity, enrichment & GBA adaptations	<i>Explore Cley Windmill *Explore Cambridgeshire Bourne Windmill Explore William Kamkwamba (black Malawian windmill inventor)</i>	<i>Explore Punch & Judy and Jerry Anderson Thunderbirds (white British male) Explore the Museu Da Marioneta (Portuguese puppet museum featuring puppets from all over the world inc Portugal, Africa, Asia and Brazil)</i>	<i>Explore Innocent Smoothies and Fage website for smoothie recipe ideas. *Field trip to Godmanchester Allotments</i>
2	Structures: Baby bear's chair	Mechanisms: Fairground wheel	Mechanisms: Making a moving monster
Substantive knowledge and disciplinary knowledge	Exploring stability and methods to strengthen structures, understanding structural weaknesses developing improved solutions.	Exploring and understanding the design process building on prior structural knowledge to problem solve when adding and developing mechanical parts	Responding to a design brief by exploring and experimenting with levers, linkages and pivots through existing products and experimentation through practical making.

Diversity, enrichment & GBA adaptations	<i>Explore John Rennie (white male Scottish Engineer) and Marcel Breuer (Hungarian- American Designer)</i> <i>*Godmanchester Feild trip looking at Chinese Bridge, Sky World for examples of structures)</i>	<i>Explore the history of the Fairground Wheel to modern day (London Eye)</i>	<i>Explore Royal De Luxe Mechanical Theatre Co</i>
3	Food: eating seasonally	Digital world: Electronic charm	Structures: Constructing a castle
Substantive knowledge and disciplinary knowledge	Developing knowledge of various fruits and vegetables understanding how, where, and why they are grown in different seasons whilst understanding basic food hygiene and safety and recipe construction.	Designing and developing programming skills to create patterns within a functioning product creating opportunities for paired/group product testing and evaluating	Identifying and learning about the key features of a castle, developing designs and exploring 2D & 3D geometric shapes within construction including problem solving and modification of design.
Diversity, enrichment & GBA adaptations	<i>*Field trip to Godmanchester Allotments. Explore Robert Trzopek (White Polish male chef)</i>		<i>*Field trip to Castle Hill where Huntingdon Castle was situated. Explore Hever Castle, Windsor Castle and Balmoral</i>
4	Structures: Pavilions	Mechanical systems: making a slingshot	Electrical systems: Torches
Substantive knowledge and disciplinary knowledge	Exploring and understanding more advanced structural engineering to develop modelling skills and knowledge based around structure stability and strength	Developing mechanical and engineering knowledge, developing moving mechanisms linking to science and constructing a working product for group evaluation and testing.	Exploring and identifying key differences between electrical and electronic products developing research skills identifying and evaluating existing products including opportunities for group work
Diversity, enrichment & GBA adaptations	<i>Explore I.E. PEI, (male Chinese-American) Architect – Louvre Pyramid and Stephen Sauvestre Eiffel Tower Architect (French Male)</i> <i>*Explore Godmanchester Chinese Bridge looking at structure and engineering</i> <i>*Explore Hinchingsbrook Den Building Forest School</i>		<i>Explore David Misell (white English male inventor) and Trevor Bayliss (white male British inventor) and explore Dr K O Mbadiwe (Black male Nigerian inventor of traffic lights)</i>
5	Electrical Systems: Doodlers	Mechanical Systems: Pop Up Book	Food: What could be healthier?
Substantive knowledge and disciplinary knowledge	Exploring series circuits and motors, building on prior knowledge of the design process investigating existing products, problem-solving and processing product construction.	Developing and exploring different ‘pop-up’ mechanisms, creating a functional pop-up storybook using lever, sliders, layers and spacers and design skills	Discovering the farm to fork process, understanding basic farming and exploring animal welfare, developing an understanding of recipe design linked to nutritional values and experimenting with developing healthier recipes.

Diversity, enrichment & GBA adaptations		<i>Explore Vojtěch Kubašta (Austrian Pop Up book creator) and Matthew Reinhart (American Pop Up book creator)</i>	<i>*Explore Godmanchester Allotments and Community Nursery *Explore Huntingdon Pizza Express for Make a Pizza Experience. *Trip to Monarch Fsrn</i>
6	Textiles: Waistcoats / Electrical Device Pocket	Structures: Playgrounds	Digital World: Navigation Tool
Substantive knowledge and disciplinary knowledge	Building upon knowledge gained of the design process, developing a range of textiles skills including pattern design and cutting, creating fastenings, applique and stitching, exploring design ideas and primary and secondary research to create a customer specific fully functioning product.	Developing research skills further to compare existing products, implementing knowledge of structures and engineering problem solving to create a specific brief led 3D outcome using a range of materials, supporting fine motor skills.	Designing and programming (using Tinkercad) a navigation tool to produce a multifunctional device for trekkers using CAD 3D modelling software. Pitching a product to promote and justify design decisions linked to a specific customer, including self and peer evaluating and identifying industrial links.
Diversity, enrichment & GBA adaptations	<i>Explore fabric linked to year 4 art unit: William Morris, English white male, (Modern). Explorer the work of artist Ganapati Hegde, Indian male artist (Contemporary). Explore Olga Nganzi-Samba-Pamza (Central Africa Republic black female textiles designer).</i>	<i>*Explore Godmanchester to Judith's Field and Sky World/Small Playground on the Rec</i>	<i>Explore Dragons Den re: pitching a product *Explore Godmanchester looking at road signs and traffic signs.</i>