Woodhouse West Primary School

Curriculum Progression Document

Design and Technology

Contents

Woodhouse West Primary School

Design and Technology Curriculum Intent

Woodhouse West Primary School- Intent

Woodhouse West Primary Curriculum Intent

As a school, we strive to create learning that promote children's interests and allows them to learn about the world around them. We develop their skills within different subject areas through a shared context.

Our curriculum;

- is ambitious and designed to give all children the knowledge and skills they need to succeed in life
- has high expectations for all children, including those with special needs and disabilities
- ensures that children study a broad and balanced curriculum by teaching a range of subjects
- is coherently planned and sequenced so children can embed and use their knowledge and skills fluency
- extends beyond academic to provide opportunities for every child to develop and discover their character, interests and talents
- is closely linked to the school's core values
- encourages children to value the Woodhouse community
- prepares children for life in modern Britain, developing their understanding of fundamental British values and equipping them to be responsible, respectful citizens

Design and Technology Subject Intent

Pupils will become increasingly competent in designing, making and evaluating products. They will investigate how design has been used to solve problems and create products and structures in the real world, including the techniques used by designers to improve looks and functionality. They will have the opportunity to design their own products in response to design briefs, learn and experiment with a range of techniques before making and evaluating products.

Essential Characteristics in the Subject

- Significant levels of originality and the willingness to take creative risks to produce innovative ideas and prototypes.
- An excellent attitude to learning and independent working.
- The ability to use time efficiently and work constructively and productively with others.
- The ability to carry out thorough research, show initiative and ask questions to develop an exceptionally detailed knowledge of users' needs.
- The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.
- A thorough knowledge of which tools, equipment and materials to use to make their products.
- The ability to apply mathematical knowledge.
- The ability to manage risks exceptionally well to manufacture products safely and hygienically.
- A passion for the subject and knowledge of, up-to-date technological innovations in materials, products and systems.

Woodhouse West Primary School- Aspirations

Aspirations for the future;

At Woodhouse West, we are always thinking about how to prepare our children for the next stage in their learning journey and beyond. We like to talk to the children about their aspirations and take the time to consider the jobs that a range of the foundation subjects are needed for.

Here are some of the jobs you could aspire to do in the future as an Design Technologist:

- Builder
- Engineer
- Jewellery designer
- Chef

For more careers, visit the First Careers website to learn more about different job roles linked to your favourite subjects

Builder

Jewellery designer

Engineer

Chef

Woodhouse West Primary School- Enrichment

Wider Curriculum Opportunities & Cultural Capital

Our curriculum extends beyond the National Curriculum and includes a wide range of enriching experiences and opportunities both within and beyond the school day. This can includes a programme of lunch-time and after-school clubs, that support the core curriculum offer, as well as those whilst also extending the range of children's experiences (Cultural Capital). A primary focus of our curriculum is to raise aspirations, engender a sense of personal pride in achievement, and provide a purpose and relevance for learning.

The school takes pride in providing a highly inclusive environment, where learners demonstrate high levels of enjoyment in their education and make very good progress across the curriculum. Children at all levels are helped to achieve their potential. Those who are most able are challenged and supported through being offered tasks which provide opportunities for greater depth and those who can struggle are encouraged and given targeted support to embed skills, to develop at their own pace or simply to learn in a style that best suits their individual needs.

We also provide further opportunities to enhance children's learning wherever possible. These can include:

Whole School Theme Days/Weeks Throughout the year, themed days/weeks are woven into the curriculum to extend the breadth and balance of opportunities we offer our pupils. These include, Anti-bullying Week, eSafety Day, World Book Day, Family Fun Fit day, an Enterprise topic culminating in a Summer Fair, Science Week, Curriculum weeks, Red Nose Day and Comic Relief.

Educational Visits and Residentials

School trips and visits are an integral part of the education of children at Woodhouse West Primary. We value the opportunities such visits offer our pupils and the commitment of staff and adults undertaking them. Trips include class visits aimed at bringing learning alive and providing first-hand experience and bringing learning alive; extra-curricular outings such as activities with the school choir or sporting events; and attending or taking part in performances or competitions.

Children in Years 2, 4 and 6 take part in residential visits. These are planned to provide new and exciting experiences. Children in Year 2 and Year 4 go on a residential visit and our Year 6 young people take part in an outdoor pursuits residential where they experience a range of activities such as orienteering, climbing, abseiling, raft building, archery and lots more.

Woodhouse West Primary School

Design and Technology in the Early Years Foundation Stage

Developing Early Design and Technology Skills

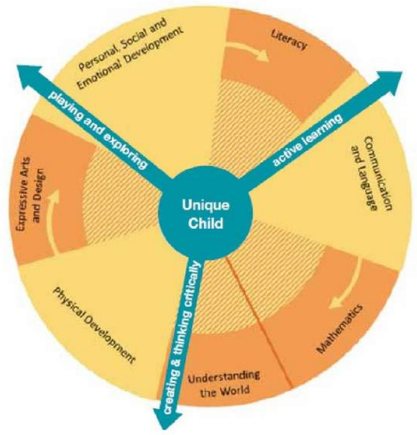
Developing Early Design and Technology Skills

The Unique Child reaches out to relate to people and things through the **Characteristics of Effective Learning**, which move through all areas of learning.

- playing and exploring
- active learning
- creating and thinking critically

Children develop in the context of relationships and the environment around them.

This is unique to each family, and reflects individual communities and cultures.



Prime areas are fundamental, work together, and move through to support development in all other areas.

- Personal, Social and Emotional Development
- Communication and Language
- Physical Development

Specific areas include essential skills and knowledge for children to participate successfully in society.

- Literacy
- Mathematics
- Understanding the World
- Expressive Arts and Design

Each area of the EYFS curriculum has an Early Learning Goal, which is the standard that a child is expected to achieve by the end of their reception year. The ELG (Early Learning Goals) covers all of the 7 areas of learning as specified in the Early Years Foundation Stage Curriculum.

The following link to the teaching and learning of design and technology in our EYFS:

ELG 7. Fine Motor Skills

Children at the expected level of development will:

- Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases;
- Use a range of small tools, including scissors, paint brushes and cutlery;
- Begin to show accuracy and care when drawing.

ELG 16. Creating with Materials

Children at the expected level of development will:

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function;
- Share their creations, explaining the process they have used;
- Make use of props and materials when role playing characters in narratives and stories.

Woodhouse West Primary School

Design and Technology and the National Curriculum

Design and the National Curriculum: Key Stage One

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

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.

Design and Technology and the National Curriculum: Key Stage Two

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

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.

Woodhouse West Primary School

Implementation of Whole School Design & Technology

Programme of Study

Woodhouse West's DT Programme of Study

	Key technical concepts				
Year Group	**Mechanics**	**Textiles**	**Structures**	**Electric and digital**	**Cooking & Nutrition**
1					
1					
1					
2					
2					
3					
3					
3					
4					
4					

Woodhouse West's DT Programme of Study

	Key technical concepts				
Year Group	**Mechanics**	**Textiles**	**Structures**	**Electric and digital**	**Cooking & Nutrition**
4					
5					
5					
5					
6					
6					

Woodhouse West's DT Programme of Study

Technical concept	KS1	LKS2	UKS2
Mechanics	Moving Toy	Moving Scene /Slingshot Car (Chariot)	Automata Toy
Textiles	Hand Puppet	Embroidered Cushion	Book Sleeve
Structures	Freestanding Structure	Bridges	Air Raid Shelter
Electric & Digital	/	/	Torch / ....
Cooking & Nutrition	Fruit Salad / Pizza	Bread	/

Woodhouse West Primary School

Implementation of Whole School Design & Technology

Progression of Knowledge & Skills

Progression of Knowledge & Skills- Concepts

At Woodhouse West, we aim to develop the following concepts through the progressive teaching of design and technology knowledge, skills and understanding. These concepts are based on the requirements of the National Curriculum Programme of Study for Key Stage One and Key Stage two.

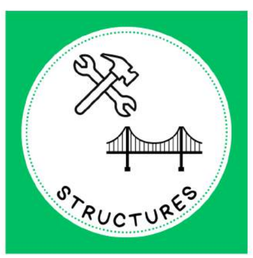
Pupils will become increasingly competent in designing, making and evaluating products. They will investigate how design has been used to solve problems and create products and structures in the real world, including the techniques used by designers to improve looks and functionality. They will have the opportunity to design their own products in response to design briefs, learn and experiment with a range of techniques before making and evaluating products.

DT Concepts

The technical knowledge will be specific to the key concepts outlined below:

Pupils will gain an understanding of how different mechanisms work, evaluate products with different mechanisms and design and make working products to fit a design brief. They will gain the technical knowledge needed to make different mechanisms work effectively.

Pupils will gain the technical knowledge needed to work with textiles such as stitching, sewing and threading. They will study textile designs and how to make products which are practical as well as stylish and then apply this learning to their own designs and products.



Pupils will learn the technical knowledge used by designers to make structures which are strong and stable. They will learn and apply strengthening techniques, explore the benefits of different shapes and materials and apply this to their own designs and products.

Pupils will learn how electronics and digital technologies are used when designing and creating products. They will gain the technical knowledge needed to programme devises and to make use of electric circuits including switches to power and control a product.

Pupils will learn where food comes from and how nutritional information can be used to plan a balanced and healthy diet. They will also learn techniques needed to prepare and cook food safely and design dishes and meals for specific purposes.

Implementation

Progression of Knowledge & Skills- Concepts

At Woodhouse West, we aim to develop the following concepts through the progressive teaching of design and technology knowledge, skills and understanding. These concepts are based on the requirements of the National Curriculum Programme of Study for Key Stage One and Key Stage two.

Pupils will become increasingly competent in designing, making and evaluating products. They will investigate how design has been used to solve problems and create products and structures in the real world, including the techniques used by designers to improve looks and functionality. They will have the opportunity to design their own products in response to design briefs, learn and experiment with a range of techniques before making and evaluating products.

DT teaching sequence:

- Appraise & Analyse
- Technical Knowledge
- Practice
- Generate ideas & designs
- Develop & Make
- Evaluating

A typical teaching sequence would include:

- Place the D&T unit in the context of similar past learning in the subject.
- Review the learning covered in previous lessons.
- Deliver a design brief, posing a relevant problem to be solved.
- Research existing products and possible construction material/ingredients/tools needed
- Practice skills needed
- Create their own designs in response to the brief and their own research
- Make the product (including making and evaluating a technical aspect first or producing and refining a prototype if appropriate)
- Evaluate their product with reference to the original design brief

Implementation

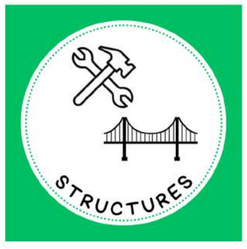
Progression of Knowledge & Skills

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
 Mechanics		To appraise and analyse mechanisms in existing products (moving toy) To identify how mechanisms work in existing products e.g. wheels/axels. To be able to make prototype mechanisms. To design using pictures and labels. To create a product which includes wheels and axels. To evaluate my product against function.		To appraise and analyse mechanisms in existing products (moving scene) To identify how mechanisms work in existing products e.g. sliders/levers. To be able to make prototype mechanisms. To design using pictures and labels. To create a product which includes sliders and levers / wheels and axels. To evaluate my product against function	To analyse slingshot and identify how they work. To identify how a chassis and launch mechanism works. To produce a mechanical prototype- slingshot. To design a car (chariot) with a slingshot mechanism. To select appropriate materials to produce a mechanical product – slingshot car (chariot) To evaluate my product and identify ways to improve my design.	To appraise and analyse a range of existing products – automata toys. To gain an understanding of how cams and followers work. To use a range of materials, tools and techniques to create a prototype– cams and followers. To design a product that meets the design brief – automata toys. To use a range of materials, tools and techniques to make a product. To evaluate an end product against a design criteria and consider the views of others to improve their work.	

Progression of Knowledge & Skills

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
 Textiles		To appraise and analyse a selection of puppets. To identify techniques used to create a puppet (stapling, gluing etc) To practise a range techniques used to make a puppet to create a prototype (stapling, gluing etc) To design a product using pictures and words. To use a range of tools and materials to create a finished product. To evaluate an end product in terms of aesthetics– puppet.		To appraise and analyse a selection of existing products (embroidered cushions) To understand how a cross stitch design is created. To practise skills identified to develop a design of my own. To be able to generate and develop ideas using exploding diagrams to design an end product. To be able to think ahead about the order of my work, select tools needed for a given task and give reasons for my choices. To be able to evaluate a finished product against a design brief.		To appraise and analyse an existing product commenting on design features (book sleeves) To understand how pattern pieces are used to make an end product. To experiment with pattern pieces to create a prototype. To design a product using pattern pieces to meet a design brief. To use pattern pieces, appropriate materials and tools to create an end product. To evaluate a product on appearance and function against an original design criteria and justify decisions made in the design and making process.	

Progression of Knowledge & Skills

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
 Structures			To appraise and analyse how a structure is made. To identify how a net is created using shapes. To practise making stable structures using nets to make a freestanding structure (chair) To design a structure (chair) using pictures and words based on a design criteria. To make and join together a stable structure (chair) using nets. To evaluate my structure in terms of design.		To research structures (bridges) and consider how these structures work. To understand different methods of strengthening bridges. To practise a range of structural designs to create bridges. To generate ideas and design a structure including strengthening techniques (bridges) To use appropriate tools and construction materials to make a structure (bridges) To evaluate my structure and suggest ways for improvement.		To analyse structural designs in terms of functionality, aesthetics, and materials. To identify the structure of different air raid shelters and analyse the support techniques to make the structure strong. To explore suitable materials to create a strong structure (air raid shelters) To generate ideas and design a structure (air raid shelters) demonstrating my design from different perspectives. To use a range of appropriate tools competently and I can join and combine a range of materials competently. To evaluate a product on appearance and function against an original design.

Progression of Knowledge & Skills

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
 Electric & Digital						To appraise and analyse a range of torches and comment on their features. To learn about electrical items and how they work. To learn how a switch controls the flow of an electric current. To design a torch based on a user profile. To make a torch based on a user profile. To evaluate my torch and identify any improvements that could be made.	To explain what a robot is and how they are being used in society today. To learn how to use Makecode (Microbits) to program a monitoring device. To learn how to use TinkerCAD to make a prototype for a robot. To design a milk carton robot. To use Microbit and TinkerCAD to program and design a robot. To evaluate virtual model against the design requirements.

Progression of Knowledge & Skills

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Cooking & Nutrition		To appraise and analyse a selection of fruit salads. To identify techniques used to create a fruit salad (chopping, peeling etc) To practise a range of techniques used to make a fruit salad to create a prototype (chopping, peeling etc) To design a product using pictures and words. To use a range of tools and materials to create a finished product. To evaluate an end product in terms of aesthetics– fruit salad.	To appraise and analyse how a pizza is made. To identify techniques used to create a pizza (chopping, mixing, kneading etc) To practise a range of techniques used to make a pizza to create a prototype (chopping, mixing, kneading etc) To design a product (pizza) using pictures and words based on a design criteria. To use a range of tools and materials to create a finished product. To evaluate an end product in terms of aesthetics and taste– pizzas.	To appraise and analyse a selection of existing products and see how it's made (bread) To identify techniques used to create bread (mixing, kneading, score etc) To practise a range of techniques used to make bread to create a prototype. To practise skills identified to develop a design of my own. To be able to generate and develop ideas using diagrams to design a product. To be able to think ahead about the order of my work, select tools needed for a given task and give reasons for my choices. To be able to evaluate a finished product against a design brief.			

Reading in Design and Technology

At Woodhouse West, reading is at the heart of the curriculum. It is our intent to ensure that every child not only develops the skills of reading but also a love of reading that will last them a lifetime. Our children read at home and school for pleasure, for information and to expand and enhance their knowledge and understanding across all subjects. Our children not only learn to read, they read to learn. Appropriate opportunities are taken to enhance children's learning in history through reading with the use of high-quality texts across a wide range of genres. These are matched to each topic in each year group, in order to impact on learning in the following ways:

- Knowledge of an extensive and subject-specific vocabulary.
- Fluency and accuracy in reading across a wide range of contexts throughout the curriculum.
- The motivation to read for both study and for pleasure.
- Extensive knowledge through having read a rich and varied range of texts.
- Strong phonic knowledge and skills.
- A strong comprehension of texts.
- A respect for historical evidence and the ability to make robust and critical use of it to support their explanations and judgments.
- A desire to embrace challenging activities, including opportunities to undertake high-quality research across a range of history topics.
- The ability to think, reflect, debate, discuss and evaluate processes (both human and physical).
- The ability to consistently support, evaluate and challenge their own and others' views using detailed, appropriate and accurate historical evidence derived from a range of sources

Implementation

SMSC in Design and Technology

SMSC within the curriculum

SMSC is not a lesson which is taught in isolation, it is interwoven throughout our curriculum. Design and Technology naturally provides rich opportunities for learning about different cultures, people and the world around them. There are clear links with global citizenship, sustainable development and similarities and differences across the world. Staff are able to enhance teaching and learning by modelling respectful language and attitudes and making strategic decisions about the content of curriculum lessons that involve the children. Where appropriate, particular articles or areas of SMSC are linked to areas of history to provide children with a broad knowledge and understanding.

What impact does this have?

Due to the fact SMSC development is integrated into our broad and balanced curriculum, children understand the importance of their SMSC key skills and it becomes a fundamental part of our school ethos. We have found that bringing a SMSC perspective to areas of the curriculum can enhance and enrich learning and instil a respectful ethos within our school. By ensuring that children have a rich SMSC understanding, we ensure that they are ready to embrace the challenges of creating a happy and successful adult life in modern Britain.

Implementation