WEST PARK CE PRIMARY SCHOOL

DESIGN & TECHNOLOGY POLICY

Original Developed by:
Date:
Approved by Governors:
Discussed with staff:
Next review date: September 2019
Date agreed by Governors:
Discussed with staff: September 2019
Next review due: Autumn 2021

Intent

Design and technology prepares children to take part in the development of tomorrow's rapidly changing world. To understand and apply the principles of nutrition and to learn how to cook. Pupils are already discriminating users and purchasers of a range of products. Design and Technology gives them the opportunity to become involved in the creative process: to plan and solve real and relevant problems in a range of contexts using a variety of materials, to develop confident and safe making skills and to reflect upon the aesthetics and function of products generally. Pupils' potential to be innovative producers, as well as informed consumers, is fostered in this subject.

Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem-solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems. Through the study of design and technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design and technology, its uses and its impacts. Design and technology helps all children to become discriminating and informed consumers and potential innovators.

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;

- To enable children to talk about how things work, and to draw and model their ideas;

- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures;

- To develop an understanding of technological processes, products, their manufacture and their contribution to our society;

- To develop an understanding of the ways in which people have designed products in the past and present to meet their needs.

- To develop a curriculum which is broad and balanced;

- To foster enjoyment, satisfaction and purpose in designing and making.

- To promote skills, attitudes and attributes that can support learning in other subject areas, and that are needed for life and work.

Implementation

Teaching:
Carefully planned units enable the teacher to teach the knowledge required by the National Curriculum whilst giving the children a purpose to develop and apply their skills. This ensures that children in our school are given opportunities to learn in cohesive blocks and 'stick' their learning together each year, building on previous knowledge, skills and experiences. The detail of our learning journey for Design Technology is contained in the unit plans for each year group.

Resources

All electrical items have been cleared as safe by county in the annual PAT test. However, it is teacher's responsibility to liaise with the subject leader should a tool break or need replacing at any point.

Risk Assessments
Due to the range of equipment used and the range of allergies and food intolerances of our children it is essential that thorough risk assessments are completed before any unit of teaching begins. The British Standard 4163:2014 requires that no more than 20 pupils undertake DT with one adult therefore all classes must work with two adults or in smaller groups. The standard also refers to the need for risk assessments to be completed and followed for preparation of food and use of tools, see risk assessments for details saved in Staff Shared Curriculum Risk Assessments and in the DT Room and dining hall. The class teacher must ensure these are completed using current information for the pupil in their class.

Through Design and Technology pupils should:

- Have their intellectual, innovative and creative abilities stimulated to generate and optimise their design proposals

- Integrate and apply technological knowledge and understanding

- Develop skills in looking at products and systems and combine this with associated values related to social, environment, spiritual, moral, aesthetic and economic aspects of products and systems

- Develop design and thinking skills, including recognition and analysis of need, generating ideas, modelling and planning possible solutions

- Use materials, technological components, tools (both hand and computer controlled), techniques and processes to create quality products

- Develop the personal qualities needed to complete a design project from initial ideas to finished product

- Develop skills in communication, problem solving, application of number and information technology

- Work autonomously and collaboratively with others on tasks.

Implementing Design and Technology

The minimum amount of Design and Technology undertaken should be one unit per term. This could be delivered as two dedicated Design and Technology days during the term and is alternated with units from the Art curriculum.

In line with National Curriculum requirements, units of work will always include three types of activity so that children have the opportunities to develop their Design and Technology capability through:

- Investigative, disassembly and evaluative activities
- Focused practical tasks
- Designing and making assignments

Planning for Design and Technology

Teaching staff currently use DATA Guidance Materials to support planning and the subject co-ordinators are released to support planning when needed.

Units of work are mapped across the year groups to ensure balance and progression.

Each unit delivered must include;
- Investigating, disassembling and evaluating activities
- Focused practical tasks
- A designing and making assignment

Focused practical tasks should be used to teach the correct use of tools and equipment.
Relevant links with art, maths, science and IT should be made in unit plans.
In planning a unit consideration should be made of the following;

- Developing children's designing skills, including generating and developing ideas, clarifying their task;

- creating design proposals, communicating ideas, planning and evaluating;

- Acquiring and refining the practical skills associated with making, including working with materials and components, tools and processes, for example by planning, measuring and marking out, cutting and shaping, joining and combining, finishing, and evaluating;

- Application of mathematical skill, for example by measuring to an appropriate number of decimal places, drawing and interpreting tables, graphs and bar charts;

- Application of ICT skill, for example by making things happen by the use of control, handling information through the use of a database or spread sheet;

- Application of art skill, for example by investigating texture and colour or recording visual information.

Curriculum Coverage

During the Foundation Stage children will work towards the areas of learning set out in the Early Years Foundation Stage that underpin the curriculum planning for children from birth to five.

During the **Foundation Stage children** will be encouraged to:

- Fit things together and take them apart
- Explore and select materials and equipment
- Change the shape and arrangement of objects, in a variety of ways, for example stacking, connecting, stretching, enclosing
- Experience and experiment with a range of technology with support
- Use a variety of tools safely
- Use skills such as cutting, joining, folding and building for a variety of purposes
- Talk about what works/ does not work and suggest improvements
- Recognise a problem and suggest ideas for solving it
- Help to plan the sequence and details of tasks
- Build and construct with a wide range of objects, selecting appropriate resources, and learn to adapt their work when necessary
- Select the tools and techniques they need to shape, assemble and join the materials they are using
- Find out and identify the uses of everyday technology to support their learning.

Key Stage One will build on and further develop these skills.

During **Key Stage One** and **Key Stage Two** we must ensure that a balance of experiences and materials are delivered and used. In delivering units of work we must look for progression in designing and making skills, and ensure knowledge about processes and techniques is taught.

Progression will be ensured by reference to the schemes of work and by each teacher knowing the content that they are required to teach. Continuity will be ensured by all staff conforming to the agreed mode of working as outlined in this policy.

Design Technology: Skills and Knowledge Progression

	Topic	Emerging 40-60 months	Expected ELG	Exceeding
EYFS		Constructs with a purpose in mind, using a variety of resources. Uses simple tools and techniques competently and appropriately. Selects appropriate resources and adapts work where necessary. Selects tools and techniques needed to	They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Children use what they have learnt about media and materials in original ways, thinking about	Children develop their own ideas through selecting and using materials and working on processes that interest them. Through their explorations they find out and make decisions about how media and materials

| | | shape, assemble and join materials they are using.

Create simple representations of events, people and objects. | uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories. | can be combined and changed.

Children talk about the ideas and processes which have led them to make music, designs, images or products. They can talk about features of their own and others work, recognising the differences between them and the strengths of others. |

Year Group	Developing, planning and communicating ideas	Working with tools, equipment, materials and components to make quality products	Evaluating processes and products
1	Begin to draw on their own experience to help generate ideas and research conducted on criteria.

Begin to understand

the development of existing products: What they are for,

how they work, materials used.

Start to suggest ideas and explain what they are going

to do.

Understand how to identify a target group for what they

intend to design and make based on a design criteria. | Begin to make their design using appropriate techniques.

Begin to 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.

With help measure, mark out, cut and shape a range of materials.

Explore using tools e.g. scissors and a hole punch safely.

Begin to assemble, join and combine materials and components together using a variety of temporary | Start to evaluate their product by discussing how well it works in relation to the purpose (design criteria).

When looking at existing products explain what they like and dislike about products and why.

Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make. |

	Begin to develop their ideas through talk and drawings. Make templates and mock ups of their ideas in card and paper or using ICT.	methods e.g. glues or masking tape. Begin to use simple finishing techniques to improve the appearance of their product.	
2	Start to generate ideas by drawing on their own and other people's experiences. Begin to develop their design ideas through discussion, observation, drawing and modelling. Identify a purpose for what they intend to design and make. Understand how to identify a target group for what they intend to design and make based on a design criteria. Develop their ideas through talk and drawings and label parts. Make templates and mock ups of their ideas in card and paper or using ICT.	Begin to select tools and materials; use correct vocabulary to name and describe them. Build structures, exploring how they can be made stronger, stiffer and more stable. With help measure, cut and score with some accuracy. Learn to use hand tools safely and appropriately. Start to assemble, join and combine materials in order to make a product. Demonstrate how to cut, shape and join fabric to make a simple product. Use basic sewing techniques. Start to choose and use appropriate finishing techniques based on own ideas.	Evaluate their work against their design criteria. Look at a range of existing products explain what they like and dislike about products and why. Start to evaluate their products as they are developed, identifying strengths and possible changes they might make. With confidence talk about their ideas, saying what they like and dislike about them.
3		Select a wider range of tools and techniques for making their product i.e. construction materials and kits, textiles, food ingredients, mechanical	Start to evaluate their product against original design criteria e.g. how well it meets its intended purpose Begin to disassemble and evaluate familiar products

	With growing confidence generate ideas for an item, considering its purpose and the user/s. Start to order the main stages of making a product. Identify a purpose and establish criteria for a successful product. Understand how well products have been designed, made, what materials have been used and the construction technique. Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. Start to understand whether products can be recycled or reused. Know to make drawings with labels when designing. When planning explain their choice of materials and components including function and aesthetics.	components and electrical components. Explain their choice of tools and equipment in relation to the skills and techniques they will be using. Start to understand that mechanical and electrical systems have an input, process and output. Start to understand that mechanical systems such as levers and linkages or pneumatic systems create movement. Know how simple electrical circuits and components can be used to create functional products. Measure, mark out, cut, score and assemble components with more accuracy. Start to work safely and accurately with a range of simple tools. Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work. Start to measure, tape or pin, cut and join fabric with some accuracy	and consider the views of others to improve them. Evaluate the key designs of individuals in design and technology has helped shape the world.
4	Start to generate ideas, considering the purposes for which they are designing- link with Mathematics and Science. Confidently make labelled drawings from different	Select a wider range of tools and techniques for making their product safely. Know how to measure, mark out, cut and shape a range of materials, using	Evaluate their products carrying out appropriate tests. Start to evaluate their work both during and at the end of the assignment. Be able to disassemble and evaluate familiar products and consider the views of others to improve them.

	views showing specific features.

Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail.

Identify the strengths and areas for development in their ideas and products.

When planning consider the views of others, including intended users, to improve their work. Learn about inventors, designers, engineers, chefs and manufacturers who have developed

ground-breaking products.

When planning explain their choice of materials and components according to function and aesthetic. | appropriate tools, equipment and techniques.

Start to join and combine materials and components accurately in temporary and permanent ways.

Know how mechanical systems such as cams or pulleys or gears create movement.

Understand how more complex electrical circuits and components can be used to create functional products.

Continue to learn how to program a computer to monitor changes in the environment and control their products.

Understand how to reinforce and strengthen a 3D framework.

Now sew using a range of different stitches, to weave and knit.

Demonstrate how to measure, tape or pin, cut and join fabric with some accuracy.

Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT. | Evaluate the key designs of individuals in design and technology has helped shape the world. |
| **5** | | Select appropriate materials, tools and techniques e.g. cutting, shaping, joining and finishing, accurately. | Start to evaluate a product against the original design specification and by carrying out tests. |

		Start to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces.	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 their work both during and at the end of the assignment.
		Begin to use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose.	Understand how mechanical systems such as cams or pulleys or gears create movement.	Begin to evaluate it personally and seek evaluation from others.
		With growing confidence apply a range of finishing techniques, including those from art and design.	Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products.	Evaluate the key designs of individuals in design and technology has helped shape the world.
		Draw up a specification for their design- link with Mathematics and Science.	Understand that mechanical and electrical systems have an input, process and output.	
		Use results of investigations, information sources, including ICT when developing design ideas.	Begin to measure and mark out more accurately.	
		With growing confidence select appropriate materials, tools and techniques.	Demonstrate how to use skills in using different tools and equipment safely and accurately with growing confidence cut and join with accuracy to ensure a good-quality finish to the product.	
		Start to understand how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.	Weigh and measure accurately (time, dry ingredients, liquids).	
			Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.	

6			
	Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces. Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. Accurately apply a range of finishing techniques, including those from art and design. Draw up a specification for their design- link with Mathematics and Science. Plan the order of their work, choosing appropriate materials, tools and techniques. Suggest alternative methods of making if the first attempts fail. Identify the strengths and areas for development in their ideas and products. Know how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.	Confidently select appropriate tools, materials, components and techniques and use them. Use tools safely and accurately. Assemble components to make working models. Aim to make and to achieve a quality product. With confidence pin, sew and stitch materials together to create a product. Demonstrate when make modifications as they go along. Construct products using permanent joining techniques. Understand how mechanical systems such as cams or pulleys or gears create movement. Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products. Know how to reinforce and strengthen a 3D framework. Understand that mechanical and electrical systems have an input, process and output. Use finishing techniques to strengthen and improve the appearance of their product	Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests. Evaluate their work both during and at the end of the assignment. Record their evaluations using drawings with labels. Evaluate against their original criteria and suggest ways that their product could be improved. Evaluate the key designs of individuals in design and technology has helped shape the world.

		using a range of equipment including ICT.	

Impact

Assessment arrangements
Assessment of children's work in Design Technology is ongoing. The assessment will include the children's skills and as well as by outcome. These outcomes are celebrated in the Best of Me books.

The policy should be read in conjunction with the Design Technology National Curriculum which sets out in detail what pupils will be taught in different Key Stages.

National Curriculum Design Technology Programmes of Study
https://www.gov.uk/government/publications/national-curriculum-in-england-design-and-technology-programmes-of-study
Children will design and make a range of products. A good quality finish will be expected in all design and make activities appropriate to the age and ability of the child. Foundation Stage children will recognise that a range of technology is used in places such as homes and schools and will be able to select and use technology for particular purposes.

Children will keep examples of their work in their DT books to aid assessment and progression and finished products will be displayed in the classroom and around school.

Examples of work, products and relevant photographs will be made available to the subject co-ordinator as evidence of work completed and as an aid to monitoring progression and assessment.

Inclusion

Each child will have an equal entitlement to all aspects of the Design and Technology curriculum. We believe that it is important for all children to experience the range of Design and Technology activities. We will use opportunities within Design and Technology to challenge stereotypes.

With specific reference to Design and technology, teachers should be aware of recent research which shows that girls tend to outperform boys in investigating, designing and evaluating and boys tend to outperform girls in planning and making. Teachers should be aware of their own expectations and their position as a positive role model. The children's access to resources, particularly computer, construction kits and tools should be monitored with specific regard to gender.

Throughout all Design and Technology work care will be taken to differentiate tasks and teaching styles in order to take into account the whole spectrum of individual needs. Consideration needs to also extend to children who are left handed or colour blind.

Health and safety

BS 4163:2014
Teachers will always teach the safe use of tools and equipment at the outset of each unit and insist on good practice. Children will be taught to return tools to the appropriate place when not in use.

Food hygiene and safety is very important:
- Children and adults will wash their hands thoroughly before handling food.
- Food will be bought when it is needed to ensure the freshest ingredients are used.
- Cupboards, table tops, cookers will be kept clean, tidy and in working order.
- Allergies will be checked before work is planned and ingredients are purchased

See risk assessments for details saved in Staff Shared Curriculum Risk Assessments and, on display, in the DT Room and dining hall.

Resources

At present, basic resources are stored in a central Design and Technology room. It is the responsibility of the class teacher to manage the resources required during their unit and advise the subject co-ordinator if additional resources are required.

In relation to everyday general resources, our aim is to organise classrooms in such a way to promote the development of independent learning. Resources and equipment should be clearly marked and labelled in order to allow visual access to the children.

Safe and tidy working practices are encouraged at all times.

Funding

Managing the funding for Design and Technology is the responsibility of the Head teacher.

Each year financial consideration will be given to:
- New equipment investment
- Equipment renewal
- The purchasing of sufficient materials to cover the breadth of design and technology
- Curriculum highlights
- Staff training needs

Review

This policy will be reviewed by the subject leader every four years. Amendments will be made where necessary after consultation with teaching staff and the governing body.

In reviewing teaching and learning that has taken place, we must look for progression in designing and making skills, and ensure knowledge about processes and techniques is taught effectively.

A critical aspect of teaching is to review work by asking:

- What has worked well in this unit?
- What was the children's reaction to the unit?
- Did it stretch the most able?
- How did you help access for those with special needs?
- Did you have any resource problems with the unit?
- What would you change if doing it again?
- What advice would you give other teachers doing this unit?