



## Pipworth Community Primary School



Article 28: I have a right to an education.

Article 29: I have a right to be supported to achieve in education.

## DESIGN AND TECHNOLOGY POLICY

### **Intent**

At Pipworth Community Primary School we aim to equip our pupils with the essential knowledge and key skills that will enable them to be successful in a modern, complex world. In order to do this, design and technology is planned with clear progression and sequencing from year group to year group. Each year group focuses on knowledge and key skills, which build upon prior learning and we aim to help pupils build up knowledge by committing it to long term memory. Our aim is to ensure all pupils, regardless of ability or need, access learning which gives them this chance, even if the complexity of their needs means they are progressing from a different starting point.

We believe that Design and Technology is important because it encourages pupils to think creatively to solve problems both as individuals and as members of a team. Children develop technical understanding and making skills, learn about design methods and investigate their environment and the materials around them. *“The nature of design and technology is such that it should provide opportunities for pupils to engage in activities that are challenging, relevant and motivating. This should give pupils enjoyment, satisfaction and a sense of purpose.”* (DATA Primary Guidance, p4) Many pupils in our school lack working role models, resulting in low aspirations for their working futures. It was found in a recent survey that the percentage of pupils within school aspiring to professions in the STEM subjects was very low. As a school, we intend to ensure that the STEAM subjects are high profile. We plan to work closely with university STEAM students and provide children with first hand experiences by inviting people with different professions into our school during careers week. These opportunities will serve as ‘hooks’ to inspire and motivate pupils and put learning into context.

Many pupils at Pipworth do not have good role models for healthy lifestyle choices. Healthy eating and exercise are not seen as a priority. Through our teaching of food and nutrition, we intend to ensure that children have a good understanding of healthy eating.

### **Implementation**

D&T projects are taught at least twice a year in each year group from Y1 to Y6 in the D&T room. Each project is organised into four phases; research, design, make and evaluate. To ensure that all areas of D&T (mechanical, electrical, textiles and food and nutrition) are being covered throughout school, long term overviews are closely monitored.

At Pipworth Community Primary School we aim to offer opportunities for children to:

- 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.
- Enable children to talk about how things work, and to draw and model their ideas.
- Encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures.
- Foster enjoyment, satisfaction and purpose in designing and making.
- Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- Understand how key events and individuals in design and technology have helped shape the world.
- 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
- 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.
- Use the basic principles of a healthy and varied diet to prepare dishes
- Understand where food comes from.

### **Impact:**

A wide range of strategies are used to measure the impact of our Design and Technology curriculum. Our teaching sequence, from EYFS, allows children to create a product that is designed and made for a specific purpose and where appropriate to assess the knowledge absorbed into the long-term memory of pupils. Formative assessments are also carried out by teachers during and after each lesson which will allow them to inform future planning. Additionally, summative assessments are carried out at the end of each unit of work using our Skills Ladders and Focus Assessment materials in order to make informed teacher judgements. In EYFS, teachers use Tapestry in order to record WOW moments and any significant learning.

Our Subject Leader will monitor the effectiveness of the Design and Technology curriculum through carrying out regular subject 'dip-ins'. These evaluations are quality assured by the Curriculum Lead, Senior Leadership.

The effectiveness of Design and Technology is also monitored through pupil throughout the course of the year.

### **Planning**

Design and Technology is planned using the National Curriculum and is carried out collaboratively in year group teams. Design and Technology projects are carried out at least three times a year per year group. Teachers plan opportunities for children to practise new skills and concepts in a variety of different ways so children become fluent in a skill. It is expected that all children, whatever their level of attainment have access to opportunities whereby they can apply their understanding and knowledge.

Teachers refer to the design and technology skills ladders to ensure that they are teaching the appropriate skills for their year group. The skills ladders aid progression as each ladder sets out the skills needed for the children to be emerging, expected or exceeding in their year group. Focus materials are also used to inform planning and provide teachers with appropriate learning challenges for their year group. Close monitoring of the long term overviews ensures that there is a balance of design and technology being throughout school.

### **Teaching and Learning**

At the beginning of a project, the purpose of the project is clearly set out by the class teacher. Following this, the children devise specific design criteria their product must meet to be successful. Throughout lessons teachers extend and support children's learning through their use of questioning. LSAs provide support for targeted groups of children within class and often support children before a new session or concept is introduced in the classroom through pre - teaching groups. Project booklets have been developed in order to support the teaching and learning of DT and ensure that all parts of the child's journey through a project are clear and evidenced.

### **The Foundation Stage**

The different aspects of the arts and design are encompassed within Creative Development in the Foundation Stage Curriculum, however elements can also be found in other areas of learning (Understanding the world, Physical development, Literacy and Mathematics). This curriculum lends itself to an integrated approach to learning. Nursery and Reception teachers plan quality learning opportunities for art and design using the Early Years Curriculum. There is an emphasis on independence and self-initiated learning, which enables foundation stage children to freely explore resources and pursue their own creative interests and talents in addition to the planned learning experiences.

### **Key Stage 1 and 2**

Staff use a variety of teaching and learning styles in design and technology lessons. The principal aims are to develop children's knowledge, skills and understanding in design and technology and food preparation. Teachers ensure that the children apply their knowledge and understanding when developing ideas, planning and making products, and then evaluating them. This is done through a mixture of whole-class teaching and individual or group activities. Within lessons, children are given the opportunity both to work on their own and to collaborate with others, listening to other children's ideas and treating these with respect. Children critically evaluate

existing products, their own work and that of others. They have the opportunity to use a wide range of materials and resources, including ICT. The National Curriculum emphasises that it is important for the children to gain knowledge and understanding of how artists and craftspeople go about their work. The children need to be exposed to the work of artists and craftspeople, and some of this information can be recorded in their sketchbook.

## **SEN**

Through the DT curriculum we provide high quality teaching for all our pupils including those with SEND. We do this through:

- Scaffolding
- Explicit Instruction
- Technology
- Cognitive and Metacognitive strategies: chunking, collaborative learning, pre teaching vocabulary, revisiting prior learning
- Flexible groupings
- Quality Interventions
- Rosenshine's Principles of Instruction

## **Assessment**

Teacher assessment is used to inform future planning and to review children's capability. Children are encouraged to make an oral or written evaluation of their work in technology throughout the key stages. Where appropriate children will use design sheets or booklets to plan, record, assess and evaluate their work. Teacher's assessments are logged on Otrack.

## **Use of I.C.T**

Information and communication technology enhances the teaching of design and technology, wherever appropriate, in all key stages. Children use software to enhance their skills in designing and making things. The children also use ICT to collect information and to present their designs through a range of design and presentation software. Children in KS2 use ICT to control their products.

## **Classroom Management and Organisation**

Safe working practices in Design and Technology at Pipworth Primary School depend on common sense, good management and organisation.

### **The following rules apply to all D&T lessons:**

- Teachers and teaching assistants always set a good example of safe practice for children to follow.
- Teachers and teaching assistants always give a clear demonstration of how to use a tool safely and how it should be transported around the room in a safe manner.
- Children are constantly reminded about using tools and equipment safely.
- Children are encouraged to develop confidence and a sense of responsibility for themselves and other children.
- Tools and materials are organised - untidiness and poor preparation of tools and equipment can create hazards.
- Children are encouraged to keep their work area organised and to collect and return tools safely and systematically.
- Clearly stated rules about safe practice are provided; children are clear about the distinction between tools for general use and those which can only be used under direct supervision.

- Unnecessary movement of children around the room is discouraged.
- Correct levels of supervision are adhered to.
- Children only use the tools and equipment appropriate for their age group, maturity, behaviour and ability.
  - We count all potentially risky tools and equipment (glue guns, junior hacksaws, craft knives, vegetable knives, sewing needles, fabric scissors, vegetable peelers and graters) before the lesson and again when they have been handed in.
  - Even if children have used them before, we always start our lessons with a reminder of how to use the tools and equipment safely.

### **Supervision required in Design and Technology lessons**

This page exemplifies what the levels of supervision mean.

It is based on a 'standard' class with a reasonably experienced teacher. However, every class and its children are different, and all teachers decide about the level of supervision needed based on:

- Complexity and hazardousness of the activity.
- Maturity of the class.
- The children's mood and behaviour, which can be influenced by time of day, day of the week, previous or succeeding lesson, weather, etc.
- The previous experience, and expertise of the children.

Supervision terminology	What this means	Equipment examples
<b>Very close supervision</b> Needed when there are significant risks of accident and injury.	Two or three pupils to one adult	Using the following for the first time: <ul style="list-style-type: none"> <li>• junior hacksaw (year 5/6)</li> <li>• craft knife (year 5/6)</li> <li>• vegetable knives (KS1 and KS2)</li> <li>• Using the oven (KS2) or hob (year 5/6)</li> </ul>
<b>Close supervision</b> Needed when there are risks of accident, but these are predictable.	Small group (up to 6) pupils to one adult.	Using the following for the first time: <ul style="list-style-type: none"> <li>• metal sewing needle (KS2)</li> <li>• plastic sewing needle (KS1)</li> <li>• fabric scissors (KS2)</li> </ul>
<b>Moderate supervision</b> Needed where the risks of an accident and injury are well controlled	10-15 pupils to one adult	Using the following for the first time: <ul style="list-style-type: none"> <li>• vegetable peeler (KS1 and KS2)</li> <li>• grater (KS1 and KS2)</li> <li>• Using a glue gun</li> </ul> After being assessed as mature and skilled enough (Year 5/6) <ul style="list-style-type: none"> <li>• junior hacksaw/ craft knife, sewing needle/ fabric scissors/ vegetable knife</li> </ul>

With practice, children will develop skills and therefore competency, which means the level of supervision could be decreased. Only their teacher will know when to reduce supervision. It is also essential that the supervising adult (teaching assistant) is also competent and capable of carrying out the required level of supervision. Meeting before the lesson to jointly trial and plan the activity is by far the most effective way of doing this.

If during the planning we realise that we cannot provide a suitable level of supervision for the class, we make one of these choices:

- Modify the planning so that we can work with a manageable group while the rest of the class carry out a related task.
- Postpone the activity until a suitable level of supervision can be arranged.
- The activity is not done at that time.

### **Using sewing needles (KS1 and KS2)**

- Plastic sewing needles are used in KS1 for sewing loosely woven materials such as binca and felt. They are large, easy to hold and manipulate, and are less likely to break the skin if a child pricks themselves.
- Metal sewing needles are used in KS2; a longer length general purpose needle is easier to manage, which reduces the risk of pricking injuries.

### **Using vegetable peelers (KS1 and KS2)**

- We use A 'Y' shaped peeler because they are safe and easy for even young children to hold and use; however, the blade is sharp, and children can cut themselves.
- Vegetable peelers are only cleaned by adults.
- Peeling safety aids (sweetcorn holders) can be used, when required.

### **Using graters (KS1 and KS2)**

- We make sure that children's fingers do not get too close to the grater, to avoid any abrasions.
- Graters are only cleaned by adults.

### **Using microwaves (KS1 and KS2)**

- Microwave ovens can be used by teachers in a classroom/staffroom.
- Use only microwave-safe cookware in a microwave.
- All food, especially liquids, can be scalding hot when they come out of a microwave-allow adequate cooling time before touching or eating any food.

### **Using vegetable knives (KS1 and KS2)**

- Vegetable knives are kept sharp to ensure they are safe to use. (Year 5 and year 6.)
- Vegetable knives are only cleaned by adults.
- Vegetable knives are stored in a secured place where only adults have access.
- Children are not allowed to walk around whilst carrying a vegetable knife.
- Children are taught relevant cutting techniques for safety (bridge hold, claw cut).

### **Using the oven (KS2)**

- Only KS2 are directly involved in using an oven independently.
- Children are taught to stand back when an oven door is opened to avoid blasts of hot air

- Children use oven gloves when accessing the oven and when handling hot food and utensils.

### **Using the hob (year 5/6)**

- Gas hobs are not used with primary school children.
- When using a hob, children should be able to look down at what they are cooking and not have to overreach.
- We teach children that, after any type of hob has been turned off, rings and plates may no longer be visibly hot but have yet to cool down.
- Position pan handles to reduce the chance of them being accidentally knocked.
- Guard against scalds from steam when lifting a saucepan lid.

### **Using fabric scissors (KS2)**

- Fabric scissors are kept solely for cutting fabrics; this ensures that the blades have not been blunted by paper and card.

### **Using electronics (KS2)**

- Electrical equipment is checked before and after use; faulty equipment is withdrawn, and the D&T Subject Leader is notified.
- Children are always warned about the dangers of using electricity.
  - Children are taught how to avoid making short circuits (short circuit happens if children directly connect the + and – terminals of the battery with a single wire).
- Light emitting diodes (LEDs) that have an internal resistor are used.
- Electrical components and batteries match e.g. 1.5v bulb with a 1.5v battery.
- Zinc carbon or zinc chloride batteries are used when children are exploring and designing and making circuits (1.5v AA batteries are the safest to use in the primary classroom; children cannot get an electric shock from these unless a great many are joined together).
- Dedicated battery holders are used.
- Batteries are stored so that their terminals cannot touch or short circuit.
- Annual PAT testing is carried out to ensure the safety of portable electrical items in school.
- We remove batteries from equipment that remain unused for long periods of time, e.g. months or more.
- If a leaky battery is identified, we wear disposable gloves and eye protection, then carefully remove the battery and put it in a sealable clear plastic bag for disposal labelled 'leaking zinc chloride battery'. We use dampened kitchen-roll paper to remove the leaked material and put this into the bag with the batteries. When all the leaked material has been cleaned up, we seal the bag and talk to our site manager about disposal.

### **Using glue guns (KS2)**

- We use high-quality low melt glue guns.
- Low melt glue guns and sticks work at a lower temperature but must still be used with caution as they will still burn (~100°C).
- A glue gun mat is used to protect furniture; a glue gun stand is also useful.
- Glue guns are used in a dedicated area.
- Children are not allowed to push the glue sticks further into the glue gun with pencils etc.
- The correct use of the glue gun is demonstrated – the nozzle is held slightly above the material to be glued (the nozzle gets blocked when children try to squeeze the glue out and the nozzle is pressing on the material).
- Before using a glue gun, we give it enough time to fully heat up, which ensures that the glue at, and on, the tip is melted and runs freely (a good indication of this is if

some glue drips out of the nozzle). If the glue is not fully melted it requires greater force on the trigger to push it out of the nozzle, running the risk of the glue spluttering as it is suddenly released. If the trigger is hard to squeeze, we wait for a couple of minutes to allow the glue to melt. The melted glue is very hot at this point and takes several minutes to cool. We keep fingers, and skin in general, away from the hot glue during this period.

- We use the correct glue gun stick in a compatible glue gun.
- If the glue gun stick is very long, we cut them to a manageable size for children to use.
- We never put electrical equipment, such as a glue gun, near water.
- We check for faulty leads and plugs on glue guns, before and after use.

### **Using junior hacksaws and bench hooks (year 5/6)**

- We use junior hacksaws with disposable metal cutting blades (with small teeth).
- Our junior hacksaws have a pistol grip which gives the user better control.
- Children are taught to draw the saw back a couple of times to create a guide notch for sawing. We encourage the child to rest their index finger along the saw (pistol grip). The pointed finger helps with accuracy and reduces side to side movement.
- Hacksaws are safer with sharp blades; we check for blunt blades regularly and discard.
  - Changing the blade on a junior hacksaw is always done by an adult. Some hacksaws have a lever in the handle to facilitate blade changes. We always ensure that saw blades are securely fitted into the handles.
  - We use a holding device (a bench hook) when cutting wood. A bench hook could be clamped to a table using a G-clamp; this is helpful for children who are learning how to cut wood.
  - Children are reminded about the danger of blowing sawdust when working with wood – as it could blow into their or someone else’s eyes; suitable eye protection is to be worn.

### **Using sandpaper (year 5/6)**

- Sandpaper is used by children to smooth and shape wood.
- Sanding produces a fine dust which can get into eyes and cause irritation; to keep dust levels down, we don’t have large groups of children sanding at the same time and suitable eye protection is worn.

### **Food Hygiene**

Pupils and staff will take care to undertake appropriate hand washing and other hygiene related activities prior to preparing food.

Pupils and staff working with food must wear aprons designated for cooking.

Painting equipment must not be washed up or used in the sink in the kitchen areas in the Nursery.

All jewellery should be removed and hair tied back.

### **Food Allergies and Intolerances**

A food allergy is when the body’s immune system (which is the body's defence against infection) mistakenly treats the protein in food as a threat. The body responds to this threat by releasing a number of chemicals in the body. These chemicals cause the symptoms of an allergic reaction.

A Food intolerance is more common than a food allergy. Food intolerances are thought to affect 1 in 10 people. Food intolerances do not involve the immune system. Instead, a food intolerance involves the digestive system and can cause difficulty digesting certain foods leading to symptoms such as abdominal pain, gas

and diarrhoea. Those who are affected often rely on allergen labelling to avoid the foods that make them ill.

Staff must ensure that a Natasha's Law matrix is completed and approved with a member of SLT.

### **Inclusion**

Lessons and activities are planned to include all children by using a range of approaches. This includes: questioning, use of equipment, and mixed ability grouping to enable children to offer peer support. Lessons are planned to facilitate the identification of children at either end of the ability range within each class. The Disability Discrimination Act (2006) requires schools to promote equality of opportunity for all pupils. As a school we have done this through improving the learning environment to increase the extent to which disabled pupils can participate and take advantage of the design and technology curriculum both inside and outside school.

### **The role of the Subject Leader:**

There is a designated DT Co-ordinator to oversee the planning and delivery of DT within the school.

The coordinator will be responsible for

- Raising standards in computing as a national curriculum subject and evaluating the effectiveness of teaching and learning within the subject
- Facilitating the use of DT across the curriculum in collaboration with all subject coordinators as well as liaising and consulting with outside agencies where appropriate
- Developing their own role as subject leader through e.g. research, National College
- Providing or organising training to keep staff skills and knowledge up to date through up to three staff meeting slots per year
- Advising colleagues about effective teaching strategies, managing equipment and purchasing resources.
- Monitoring the delivery of the DT curriculum and reporting to the SLT on the current status of the subject.
- Reporting the current status of the subject to designated School Governors.
- Action Planning linked to whole school priorities
- Updating the policy annually
- Support from SLT/Curriculum lead will be given to subject leaders in order to further develop their role through:
  - Mentoring subject leaders new to role
  - Developing the role of subject leaders and providing professional development opportunities
  - Guidance for Action planning linked to whole school priorities
  - Support for monitoring
  - Professional Development Opportunities for subject leaders e.g. National College, NPQ

### **Marking**

It is expected that children will receive instant feedback within lessons in order to improve and further their learning. Teachers are expected to complete Project

Booklets with the children as part of the teaching sequence and these should be annotated with comments at the end of the project.

### **Resources**

DT coordinator is responsible for auditing, reviewing and evaluating resources through school.

### **Monitoring the Policy**

Monitoring the standards of children's work, planning and quality of teaching in design and technology is the responsibility of the design and technology subject leader and the SLT (senior leadership team).

Drop-ins are carried out every half term to look at children's work and to evaluate progression.

Lesson observations are carried out termly.

Although the RAG is carried out every 3 years, it is referred to regularly to identify strengths and areas for development. This policy represents a statement of a whole-school commitment to the teaching of design and technology and will be reviewed annually.

### **Remote Home Learning**

In the event of a school closure or 'bubble' having to self-isolate, DT work will be put onto Google Classroom for children to access from home as closely matched to lessons and learning taking place in school at that time. Paper copies of any DT work will also be available for families to collect from the school office or sent home with children. Children completing work on Google Classroom will be given feedback on their work. Where specific resources may be needed these lessons will be taught when the children return to school.

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