

Our vision for **Design & Technology (DT)** at Birley Spa Primary Academy

Intent

At Birley Spa Primary Academy, Design and Technology showcases our school values and is taught as part of the school's overall curriculum and the skills, techniques and experiences of this subject embody the Design and Technology curriculum. Design and Technology is an inspiring practical subject. Pupils use creativity and imagination; they design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire and utilise a broad range of subject knowledge and use cross-curricular skills from mathematics, literacy, science, computing and art.

Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Implementation (including pedagogy)

At Birley Spa Primary Academy, Design and Technology is taught in every year group, over three half terms per year. Over these three half terms, topics are blocked to allow children to focus on developing their knowledge and skills, studying each topic in depth. We have developed a progression of skills document with each year group, which enables all pupils to build on and develop their skills each year.

Medium term planning for all units will cover key design and technology concepts: Developing, planning and communicating idea, working with tools, equipment, materials and components to make quality products (including food) and evaluating processes and products (See DT progression document).

Differentiation is facilitated by teachers, to ensure each pupil can access the Design and Technology curriculum. Pupils are given the opportunity to self and peer assess design planning and final products, which is used to inform planning, preparation, differentiation and address misconceptions.

Key Stage 1/Key Stage 2 Lesson Structure (1 hour lesson)

- Introduction (5 minutes) - Introduce the Learning Objective, success criteria – identify whether we are 'design' 'make' or 'evaluate' of our DT product process
- Pupils Skill Development (5 minutes) - Teacher introduces the skills linked to the Learning Objective
- Input (20 minutes) – Teacher introduces concept
- Pupil Reflection (25 minutes) Teacher models what they want the children to do. Children may also be given video examples of what is expected from the lesson. The

vocabulary linked to the lesson will also be used during this time. Pupils carry out the given task.

- Conclusion (5 minutes) Pupils reflect on the task they have done

EYFS:

The Early Years Foundation Stage Curriculum supports children's understanding of Design and Technology through the planning and teaching of 'Personal, Social and Emotional Development' 'Physical Development' 'Understanding the World' and 'Expressive Arts and Design'. These aspects allow children to use a range of resources they need, use large muscle movements to paint and make marks, use one-handed tools and equipment, explore how things work, make imaginative and complex 'small worlds' with blocks and construction kits, explore materials. Children are encouraged to design their own ideas and use materials to express them and create closed shapes with continuous lines and use shapes to represent objects. This will be done through a curiosity approach to learning and will be mainly child-led with appropriately targeted questions, activities, discussions, stories and trips. Practitioners can use questions such as 'What do you think will happen...' 'What materials could you use?' 'Tell me more about...' 'What else could you try?' to explore children's design and technology learning.

Key Stage 1:

In line with the national curriculum 2014, the curriculum at Birley Spa aims to ensure that all pupils:

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 wide range of tools and equipment to perform practical tasks. 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 in their products

Cooking and nutrition

- Use the basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from

Key Stage 2:

Throughout key stage 2, pupils continue to develop their design and technology knowledge and understanding:

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. Select 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

Technical knowledge

- Apply their understanding of how to strengthen, stiffen and reinforce structures that are more complex. Understand and use mechanical systems in their products. Understand and use electrical systems in their products. Apply their understanding of computing to program, monitor and control their products

Cooking and nutrition

- Understand and apply the principles of a healthy and varied diet. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Design and Technology Pedagogy

Key pedagogy that underpins the teaching of Design and Technology at Birley Spa Primary Academy includes the following:

1. Questions and Questioning

Questioning is a key part of Design and Technology.

Closed and open questions: We can ask children closed or open questions. Opened questions will promote higher order thinking and help children to develop their thinking skills. Such as Understanding how something is made, how does it move, how is it attached, the process behind making an object, how can we improve our final piece, what worked well and what could be better.

Key questions: key questions are overarching questions to drive and focus children's interest within a topic. A key question for a topic might be: How do boats float? A lesson within this topic might be: how can we make our final piece waterproof?

Teaching D&T involves planning curriculum to grow children's D&T capability. The aim is for children to become autonomous – able to plan, investigate and research aspects of their own project. To do this, teachers allow time and space for children to think and do for themselves, where they actively and purposefully make their own design decisions. Then children have the ability to:

- Use their developing knowledge and skills in a creative and purposeful way.
- Take responsibility for the form and direction of their work
- Make informed judgements.
- Handle uncertainty
- Modify their work in the light of personal reflection

2. Speaking and listening: Oracy

Speaking and listening are crucial for practicing and embedding new vocabulary and concepts. They form the basis of social interaction and teaches skills such as turn taking and listening to peers. Discussion and debate sharpens thinking skills and promotes understanding.

We give children opportunities to develop their oracy through:

- The key question and issue (e.g. making a balanced meal)
- Children sharing their design thoughts and ideas
- Promoting orderly thinking for the process of making their product
- Evaluating their own or peers design planning and final piece

3. Reading books

Reading books within Design and Technology provides children with the opportunity to explore the process of already existing products. This allows children to use existing ideas to create their own design plan and make their final product.

4. Questions and hypotheses

Here are two effective approaches we aim to use:

- Pose children with a DT question, to encourage children to generate a design specification to suit the criteria.
- Formulate hypotheses for children to test by evaluating existing products.

5. The visual image

Visual images are powerful teaching and learning tools, providing children with a starting point to their designing process. We need to teach visual skills to children and that means treating pictures as a source of information. Children need to look deeply at images. Design and technology is about designing something completely from scratch, not remaking something that already exists. Children need to use images to gather thoughts and ideas, rather than just copy ideas. Here are some strategies for engaging children in reading pictures:

- Put a photocopy of the picture in the middle of the sheet of paper
- Show children a picture and ask them to write down three things they like about the objects and three things in which the object can be improved
- Play 'I spy with my little eye'
- Show children an image and ask them to discuss how they think it moves/rolls/folds etc.
- What do children think the process in making the product on image was

6. Objects

Objects allow children to explore the process of making their product further. As children hold objects they can move/touch/feel/fold/roll them to help the design process of their own final product. Objects can allow children to think about the size of their final product, how big or small does it need to be? Who is the audience? What is the design criteria? Strategies for introducing and using objects:

- Going outside and looking at real life objects
- Looking at a comparison of different objects, talk about the similarities and differences: children to take ideas from existing objects
- Children to observe objects closely
- Raise what, where, how, when and why questions about an object

Wider curriculum implementation expectations:

In order to support children in their ability to know more and remember more and to contribute towards their design planning and final piece, there are regular opportunities to review the learning that has taken place in previous topics and lessons. Lessons will use key skills and vocabulary taught in previous lessons and year groups, which follows the progression document.

Effective CPD is available to staff to ensure high levels of confidence and knowledge are maintained. To support teaching, staff access a range of resources and planning using the 'Projects on a Page' scheme accompanied with medium term planning outlining the hours needed to teach the 'design' 'make' 'evaluate' process.

Impact

Pupils' achievements can be assessed in a variety of ways over EYFS, key stage 1 and key stage 2. These include direct observation, discussion and questioning of pupils as well as by evaluation of the finished product itself. Teachers should collect evidence of individual, group or class work for assessment purposes, chosen from the following formats: Pupils' annotated sketches / plans / drawings; photos of pupils 'at work'; specific assessment assignments to evaluate a particular capability; photos of part or completely finished work (products); children's own written / verbal evaluations of their tasks / activities; appraisal / evaluation of the finished article. These types of records can be used to accumulate a snapshot of current D&T practice within the subject portfolio for the whole school. Some evidence of children's work and attainment in D&T should be recorded and placed in the children's individual folders. At the end of each academic year these folders will be passed onto the children's new class teacher.