

Sandy Hill Academy

Teaching and Learning Principles

Subject: Design & Technology

Mission Statement:

'Aspiring to achieve, determined to succeed'

In DT we aim to:

Provide our pupils with a hands-on, creative experiences to support the development of a practical identity and a capability for innovation. The subject provides opportunity for collaboration, team working and communication – skills that are essential for future employment.

DT gives children the opportunity to develop skills, knowledge and understanding of designing and making functional products. It is vital to nurture creativity and innovation through design, and by exploring the designed and made world in which we all live and work.

DT provides pupils with opportunities to learn to deal with ambiguity; undertaking tasks without all the information necessary to complete them from the outset. Learning to cope with ambiguity is an important characteristic of a well-educated person. It will help to empower pupils and develop their self-confidence holistically.

- Develop a love of DT and its ability to express creativity
- Develop pupils abilities to hypothesise, synthesise and reflect upon ideas
- Develop hands-on practical opportunities for pupils to explore working with a range of materials and tools
- Develop opportunities for pupils to gain a deeper understanding of cooking, nutrition and safety precautions.
- Further enhance social and emotional wellbeing in all children
- Deliver high quality DT across the school
- Provide opportunities for all children to experience team work, collaboration and communication skills
- Provide pupils with opportunities to combine their design and making skills with knowledge and understanding they learn to create quality products.
- Achieve and exceed the expectations within the National Curriculum
- Provide opportunities to develop children's leadership skills



Our Sandy Hill Expectations apply to the teaching and learning of DT; embedding opportunities to promote healthy, social and thinking skills.

Ofsted

As part of the new Ofsted Framework a key element is the **deep dive**. It is vital that subject leads are aware of this new part of the framework as the impact of the core subjects, as well as the foundation subjects, will be scrutinised deeply to discover the impact on pupils and their quality of education.

‘The intent of the **deep dive** is to seek to interrogate and establish a coherent evidence base on quality of education. Bringing it together: inspectors will bring the evidence together to widen coverage and to test whether any issues identified during the **deep dives** are systemic.’ (Ofsted 2019).

These following questions are taken from the a document published by the Third Learning Space (Ofsted Deep Dive questions April 2020)

- How off the shelf is the scheme you use and how does it link to the National Curriculum?
- How do class teachers know what went before in previous years?
- What is your pedagogy in foundation subjects?
- What schemes, if any, do you follow?
- How is curriculum coverage progressive throughout the school?
- What are the strengths/areas of development in your subject?

Below is a response to these questions with regards to Design and Technology at Sandy Hill Academy:

With regards to the subject Design and Technology at Sandy Hill Academy, currently no specific scheme is used to enable class teachers to access DT at a level and suitability for their pupils. However, if teachers feel a scheme would be a more effective way of teaching high quality DT then this can be looked into further. Transition meetings take place at the end of each academic year to enable class teachers to discuss individual children’s needs and learning preferences. Regular CPD and staff meetings are arranged throughout each year to ensure that teachers share their subject knowledge with each other and make decisions about how to implement DT across the Key stages. Pedagogy in DT regularly follows the structure provided within the National Curriculum; it is then altered to meet the needs of all pupils to ensure high quality teaching and learning experiences in DT are provided. DT lessons are taught in practical ways with many links to other subjects within the curriculum, this particularly occurs within effective EYFS practice. Curriculum coverage in DT at Sandy Hill Academy shows effective progression throughout the school as teachers have an understanding of the skills needed to be taught in DT lessons and how these skills progress through the Key Stages by the continuous development of the pupils’ knowledge and understanding. The current strengths of DT at Sandy Hill Academy are; the variety of resources made available to the pupils to enhance practical learning experiences, the passion and enthusiasm shown towards teaching the subject across the school and the effective cross-curricular links made during DT learning opportunities. An area for development would be for myself (as DT subject lead) to develop the confidence to share subject knowledge and quality research with colleagues to ensure that a deep dive into DT is accomplished effectively throughout the whole school.

Design and Technology (National Curriculum 2014):

KS1

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.

KS2

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.

Cooking and Nutrition:

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

Key stage 1: use the basic principles of a healthy and varied diet to prepare dishes - understand where food comes from.

Key stage 2: 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.

EYFS

Addressing DT in the Early Years can enable children to make sense of the 'made world' in which they live. By making, changing and modifying (or designing) things for themselves, children can come not simply to a greater understanding of their world, but to a sense of agency - of being able to change and modify their environment. Design and technology enables young children to gain knowledge and understanding of their world.

In the EYFS DT is taught through many aspects of the EYFS Curriculum as the importance of interlinking Prime and Specific areas is essential to providing effective Early Years practice. However, specific curriculum links to DT in the EYFS are found within the specific Expressive Arts and Design area of learning.

With regards to the Characteristics of Effective Learning, DT opportunities in the Early Years will encourage children to explore, observe, solve problems, think critically, make decisions and to talk about why they have made their decisions. Children will also contribute to taking risks and engaging in new experiences; enabling them to develop resilience and the ability to bounce back after difficulties or challenges they may face.

In our Nursery and Reception class' aspects of Design and Technology are taught on a daily basis through continuous provision areas, outdoor activities, Understanding the World, Mathematics, Physical Development and especially through Expressive Arts and Design. In Reception, this is further developed with specifically taught activities through a model teaching approach. A variety of resources are selected and used to supplement our planning but the focus of learning will always be based upon the curriculum and children's next steps.

At Sandy Hill Academy we use Tapestry, our online learning journal, to record and track children's progress and achievements in DT against the age related development areas and the Early Learning Goals. Children who need additional help are identified and interventions put in to place when appropriate.

Children's progress within DT is reported to parents through: settling in meetings, sharing learning journals and regular communication. In line with statutory requirements children are assessed against the Early Learning Goals for DT within the area of Expressive Arts and Design at the end of the Reception year and this is reported to the LA and parents.

Area	Early Learning Goal (2)	Exceeding (3)
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Exploring and using media and materials	Children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	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 can be combined and changed.
Being imaginative	Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.	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.

Planning

As a new Subject Leader for Design and Technology, I believe it would be useful for Sandy Hill Academy to become a member of the Design and Technology Association. This specific association provides high standard resources and sufficient support for planning the subject within the teaching of other vital curriculum subjects.

Currently within the planning for DT, learning objectives are matched to the National Curriculum. Tiered learning outcomes are given to learners in order for pupils challenge themselves yet still be able to achieve as these style learning outcomes are accessible to all. Success criteria is shared with learners through quality modelling, marking of evidence in books (shown as PRT) and re-emphasised throughout the session. Health and safety considerations, equipment lists and SEND considerations are also noted. Allergies to any food substances are also made aware by all to ensure there is a low risk of accident or injury. All Teachers have had the opportunity to complete Food Safety and Hygiene training through our Academies system iHasco to contribute to the effective delivery and safety of cooking and nutrition. The teaching and learning of DT at Sandy Hill Academy has now been planned to take place on specific 'DT Days' throughout the academic year. Following a DT Subject Lead day (25th June 2021) it was agreed that blocked days for DT learning to take place would be more beneficial for the children as they would be able to become fully immersed in their learning. Therefore, two days each term have been set by the DT Subject Lead to allow all teachers and pupils to take part in the DT Days across the academic year.

A typical Medium Term plan of Design and Technology at Sandy Hill would aim to look like this following the structure within the National Curriculum:

DT Day 1 Research and Design	DT Day 2 Make and Evaluate
During the first DT day of the term, the essential product research and design process should take place. Children should be shown and taught examples of how to design purposeful, functional, appealing products for themselves and other users based on a design criteria.	During the second DT day, children should then be taught how to select and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Children should also gain an understanding of how to select and use a wide range of materials and components, including

Children should be encouraged to generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.

Children should be provided with opportunities to investigate and analyse a range of existing products; evaluating their ideas and products against their own design criteria and consider the views of others to improve their work.

Children should develop an understanding of how key events and individuals in design and technology have helped shape the world.

It is vital that teaching and learning experiences are differentiated to enable equal opportunities for all children to achieve throughout the Medium Term plan.

construction materials, textiles and ingredients, according to their characteristics and design plans previously created.

Children should experience building 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.

Children should also be able to 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].

Learners are assessed during sessions to identify whether they require support or challenge. Evidence will be captured through photographs or writing design work which will be available in their appropriate subject book.

Learners conduct self and peer assessment during sessions, using ICT to photograph and video where appropriate in order to aid progression of learning.

Skills Progression:

At Sandy Hill, we use the objectives from the National Curriculum to ensure good coverage and challenge for all. We carefully track the objectives to ensure that new learning builds on prior knowledge and consolidates understanding showing sound progression across the depth and breadth of the subject.

Within lessons and topics, we ensure sufficient time is given to recall prior learning so that children are able to see and develop links within their learning. Specific subject related skills will be enhanced and developed during effective teaching and learning experiences; providing children with plentiful practical hands-on experiences.

Below are examples of documents that could be accessed through the Design and Technology Association to support appropriate progression.

Designing

About designing
When designing, children need to understand the context that surrounds it, think about what their products will be like and what they will do and how they will be made. They need to understand how to generate ideas, model and communicate their ideas in a variety of ways, including communication, drawing, modelling, prototyping, production and problem solving.

KS1 What their products are for
Children should be able to identify what the purpose of their products are. They should be able to identify what their products are for and how they will be made.

KS2 How knowledge of what is produced
Children should be able to identify what their products are for and how they will be made.

Designing Key Stage 1

Understanding the design process

- Understand the design process, including:
 - generating ideas, including:
 - brainstorming, mind mapping, sketching, drawing, modelling, prototyping, production and problem solving.
 - communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
 - evaluating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
 - communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.

KS1 Carry out simple designs
Children should be able to carry out simple designs, including:

- generating ideas, including:
 - brainstorming, mind mapping, sketching, drawing, modelling, prototyping, production and problem solving.
- communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
- evaluating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
- communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.

Designing Key Stage 2

Understanding the design process

- Understand the design process, including:
 - generating ideas, including:
 - brainstorming, mind mapping, sketching, drawing, modelling, prototyping, production and problem solving.
 - communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
 - evaluating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
 - communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.

KS2 Prototype and pattern pieces
Children should be able to prototype and pattern pieces, including:

- generating ideas, including:
 - brainstorming, mind mapping, sketching, drawing, modelling, prototyping, production and problem solving.
- communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
- evaluating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
- communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.

Evaluating

About evaluating
When evaluating, children should make thoughtful judgements about their own ideas and products against other ideas. They should be able to identify what their products are for and how they will be made. They should be able to identify what their products are for and how they will be made.

KS1 Make simple judgements
Children should be able to make simple judgements, including:

- generating ideas, including:
 - brainstorming, mind mapping, sketching, drawing, modelling, prototyping, production and problem solving.
- communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
- evaluating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
- communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.

Evaluating Key Stage 1

Understanding the design process

- Understand the design process, including:
 - generating ideas, including:
 - brainstorming, mind mapping, sketching, drawing, modelling, prototyping, production and problem solving.
 - communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
 - evaluating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
 - communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.

KS1 Carry out simple designs
Children should be able to carry out simple designs, including:

- generating ideas, including:
 - brainstorming, mind mapping, sketching, drawing, modelling, prototyping, production and problem solving.
- communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
- evaluating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
- communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.

Evaluating Key Stage 2

Understanding the design process

- Understand the design process, including:
 - generating ideas, including:
 - brainstorming, mind mapping, sketching, drawing, modelling, prototyping, production and problem solving.
 - communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
 - evaluating their ideas, including:
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KS2 Prototype and pattern pieces
Children should be able to prototype and pattern pieces, including:

- generating ideas, including:
 - brainstorming, mind mapping, sketching, drawing, modelling, prototyping, production and problem solving.
- communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
- evaluating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.
- communicating their ideas, including:
 - drawing, modelling, prototyping, production and problem solving.

Here is an example of through the 'Design' from Twinkl Design and document.

Technical knowledge

About technical knowledge
Technical knowledge is the body of knowledge and skills that children learn through their school and home experiences. It is the knowledge that underpins the design and technology process.

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Technical knowledge is the body of knowledge and skills that children learn through their school and home experiences. It is the knowledge that underpins the design and technology process.

Key Stage 1
At KS1, children should be able to:
- identify the design features of their products that will appeal to intended customers;
- use their knowledge of a broad range of existing products to help generate their ideas;
- design innovative and appealing products that have a clear purpose and are aimed at a specific user;
- explain how particular parts of their products work;
- use annotated sketches and cross-sectional drawings to develop and communicate their ideas;
- when designing, explore different initial ideas before coming up with a final design;
- when planning, start to explain their choice of materials and components including function and aesthetics;
- test ideas out through using prototypes;
- use computer-aided design to develop and communicate their ideas (see note on p. 1);
- develop and follow simple design criteria;
- work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.

Key Stage 2
At KS2, children should be able to:
- use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose, aimed at particular individuals or groups;
- use their knowledge of a broad range of existing products to help generate their ideas;
- design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user;
- explain how particular parts of their products work;
- use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas;
- generate a range of design ideas and clearly communicate final designs;
- consider the availability and costings of resources when planning out designs;
- work in a broader range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.

how progression is developed aspect of the subject taken Technology Progression

	KS1	LKS2	UKS2
Design	<p>KS1 Design and Technology National Curriculum</p> <p>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.</p> <p>They should work in a range of relevant contexts [for example, the home, school, gardens and playgrounds, the local community, industry and the wider environment].</p> <p>Children design purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>They generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p> <p>Children can:</p> <ol style="list-style-type: none"> use their knowledge of existing products and their own experience to help generate their ideas; design products that have a purpose and are aimed at an intended user; explain how their products will look and work through talking and simple annotated drawings; design models using simple computing software; plan and test ideas using templates and mock-ups; understand and follow simple design criteria; work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment. 	<p>KS2 Design and Technology National Curriculum</p> <p>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.</p> <p>They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].</p> <p>Children 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.</p> <p>They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p>Children can:</p> <ol style="list-style-type: none"> identify the design features of their products that will appeal to intended customers; use their knowledge of a broad range of existing products to help generate their ideas; design innovative and appealing products that have a clear purpose and are aimed at a specific user; explain how particular parts of their products work; use annotated sketches and cross-sectional drawings to develop and communicate their ideas; when designing, explore different initial ideas before coming up with a final design; when planning, start to explain their choice of materials and components including function and aesthetics; test ideas out through using prototypes; use computer-aided design to develop and communicate their ideas (see note on p. 1); develop and follow simple design criteria; work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment. 	<p>KS2 Design and Technology National Curriculum</p> <p>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.</p> <p>They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].</p> <p>Children 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.</p> <p>They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p>Children can:</p> <ol style="list-style-type: none"> use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; use their knowledge of a broad range of existing products to help generate their ideas; design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user; explain how particular parts of their products work; use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas; generate a range of design ideas and clearly communicate final designs; consider the availability and costings of resources when planning out designs; work in a broader range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.

Teaching and Learning Expectations:

- Design and Technology will be taught during two scheduled DT Days each term.
- All children are able to access Design and Technology.
- Teachers to use skills progression documentation to assess learners.
- All children to have equal opportunities to access tools and resources.

- Children/Teachers who are unable to take part in specific Design and Technology learning experiences (because of severe allergies) will be able to access the specific subject area in other ways.
- One piece of Design and Technology recorded per half-term in back of topic books (if topic related) or in any other subject related books.
- Class blogs and social media to include examples of Design and Technology from Nursery-Year 6.
- All teachers decide upon one famous and/or local crafter, designer and chef to study per term.

Working Walls/Displays:

- All classes to display current Design and Technology learning relating to current topic.
- Hall display (main building) promoting children's larger scale projects.
- My Personal Best values and Sandy Hill STARS on display in all classes/key communal areas of the school to refer to when completing Design and Technology learning.

Monitoring/Assessment:

- Exit Points (e.g.: assemblies, large scale projects, visitors, DT Days)
- Use of assessment documentation to identify children, WTS, EXS and GDS
- Pupil Conferencing
- Learning Walk/Lesson Observations
- Work/book Scrutinies
- Staff meetings to continuously evaluate current practices and reflect upon ideas.
- Appropriate CPD