



Nova Design and Technology Curriculum

Intent At Nova Primary Academy, the Design and Technology curriculum aims to provide children with opportunities to learn about and apply a range of processes needed to design and make successful products. Through our progressive curriculum, we encourage our children to be inspired to create a range of structures, mechanisms, textiles, electrical systems and food products with a real-life purpose. We offer children opportunities to research, design, make and evaluate products involving textiles, food and construction.

Our curriculum is organised to ensure progression in the following areas: conceptual knowledge, procedural knowledge and disciplinary knowledge. Conceptual knowledge (principles that designers and engineers must understand to design a product) focuses on structures; mechanisms, programming and control and materials.

Procedural Knowledge (skills and craftsmanship of designers and engineers) focuses on marking out; shaping; joining and finishing.

Disciplinary knowledge focuses on the design process which maps out the following sequence:

1. How do designers identify a need?
2. Generating ideas
3. Making prototypes
4. Testing ideas
5. Communicating designs
6. Evaluating products

Our DT curriculum provides children with opportunities to be innovative problem- solvers and risk-takers who consider their own and others needs, wants and values. The curriculum provides opportunities to draw on other subjects, such as maths, science, engineering, computing and art - which is the heart of our STEM inspired school.

Implementation Our design and technology curriculum is planned from the national curriculum and supported with resources from the United Learning Curriculum and Oak Academy.

At Nova Primary, we teach food as part of our design and technology curriculum in every year group. This is following pupil conferencing and subject monitoring which directed our aims to ensure that all pupils leave Nova with the ability to cook a selection of healthy dishes using a variety of techniques. We aim to enable pupils to be able to make choices about what they eat based on values like source, seasonality and nutritional value.

In Early Years, pupils learn about Design and Technology within the Expressive Art and Design area of the Early Years curriculum. Pupils are encouraged to choose appropriate materials for different tasks and practise mark making, cutting and sticking. They explore using different textures, techniques and tools in their creations and how resources can be carefully chosen to build a model.

In KS1 and KS2, pupils will learn about cooking and nutrition by creating fruit salads, healthy sandwiches, bread, pizzas, soup and a meal on a budget. Within this learning, pupils will evaluate existing products; learn about seasonality and farming; how to hygienically and safely prepare food and cook/create final products.

In design and technology, pupils are given the opportunity to evaluate existing products; generate ideas using design criteria and considering purpose and user; create prototypes and test ideas before designing and making products to evaluate. In KS1, pupils begin to learn about mechanisms, structures and textiles. In their mechanisms learning, pupils will learn about levers and wheels and axels. Within this learning, pupils will create moving picture books and fire engines. Within their structures units, pupils will learn to build and strengthen free-standing structures. In Year 2, pupils will begin their learning on textiles by exploring different sewing techniques and designing finger puppets.

In KS2, pupils build on their skills and knowledge of mechanisms by designing and creating pop-up books with levers and linkages before moving on to designing toys with pneumatics and cams. In their structures learning, pupils in KS2 will consider materials and learn about different joining techniques to design and create photo frames, musical instruments and lighthouses. In upper KS2 this will involve wood-work and building structures with an electrical circuit attached. Pupils' textiles learning will develop on the skills learnt in KS1 to include sewing a coin purse and an Ipad case. Our computing and DT learning combines in KS2 where children will explore computer systems and learn how algorithms and coding can be used to make a model move.

Throughout our curriculum, pupils learn about the work of different designers and apply this learning to their own designs and creations.



Implementation

Our curriculum has been designed to be ambitious for our pupils. Our lessons are planned and taught so that previous knowledge is revised and built on. Design and Technology skills are taught progressively through our curriculum and pupils build on prior learning whilst also developing a better understanding of subject specific vocabulary. Subject Leaders create knowledge organisers which outline the key vocabulary and key skills and knowledge for that unit. In our design and technology planning and teaching, we provide the following:

- Key skills at the beginning of every lesson that revisit and embed previous learning
- Opportunities and questioning used to revisit and consolidate prior learning.
- Educational visits and visiting experts to enhance the learning experience. This includes clubs and additional activities linked to DT and STEM.
- Opportunities for all pupils to see themselves and their community reflected in the curriculum.
- Learning that is accessible for pupils of all abilities. Scaffolds or adult support is provided when needed.

Our Design and Technology curriculum is taught in a blocked approach in each term across the school year. This means that pupils will be able to build on previous learning in a sequenced approach over the course of 3 weeks. At Nova, throughout the year, each year group will make use of the 'Launchpad' a purpose built DT and STEM area which enables pupils to develop their skills with resources and equipment being readily available.

Impact Our Design and Technology curriculum is sequenced and planned to demonstrate progression. Pupils will build their understanding of a variety of designers whilst also developing their design skills. Pupils will develop their understanding of conceptual, procedural and disciplinary knowledge needed for Design and Technology and will be able to show an understanding of the design process. Pupils will show progression in a variety of skills such as marking out, shaping, joining and finishing whilst also showing increasing confidence in the different areas of our DT curriculum: nutrition and food, structures, mechanisms, textiles, materials and programming.

Each sequence of learning will allow pupils to develop their skills and create a final piece showcasing the skills they have learnt. Our curriculum is designed to be ambitious and challenging. We believe that if pupils are keeping up with the demands of each lesson, that they are making good or better progress.

We also measure the impact of our Design and Technology curriculum in the following ways:

- Key Skills questions at the beginning of lessons to recognise misconceptions and embed key knowledge and vocabulary.
- Pupil's books and pupil discussions about their learning.
- Teachers discussing learning with pupils in the lesson and reflecting where additional support or challenge may be needed.

Our Design and Technology curriculum is also planned in a way which promotes the cultural capital of all our pupils. We enhance our curriculum especially for the most disadvantaged by organising different design and STEM activities and clubs. We also provide additional opportunities such as school trips to enrich pupil's understanding and provide context through first-hand experiences.