

# Design & Technology

# Overview

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Design and Technology should be an inspiring subject. In an age when schools cannot predict the jobs the children they teach will undertake in twenty years, Design and Technology is a subject that can bridge that skills gap. The skills, technique and processes that are applied within Design and Technology can be applied across so much more: risk taking; innovating; research and evaluation.

With this in mind at Riverside Junior School we promise that each child will:

- Cook in every year group
- Take risks using and selecting real life tools in the creating of prototypes and products
- Research and critique their own and others products/ideas
- Learn about real life designers within the UK who were at the forefront of innovation inspiring their own process
- Learn how design has shaped and changed products within and without the family home

# Cooking in every year group

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Cooking is a crucial skill that stretches beyond the classroom.

Therefore each year group will undertake a half term focussing on the key principles of nutrition and healthy eating, instilling a love of cooking that also celebrates the rich food heritage of the county they live in, Yorkshire. We believe that the earlier children are introduced to the joy of cooking for oneself the more likely this will be a passion that empowers them to feed themselves and others in later life with passion and pride.

## **Our curriculum promise – Cooking and nutrition**

*Year 3 - How to cook and prepare healthy alternatives within our daily diets (Linking with Science learnt in Year 3 regarding healthy and balanced diets)*

In Year 3, children will explore healthy alternatives to the three main meals of the day: breakfast, lunch and dinner. Across six exciting and practical sessions, they will prepare and make the following:

Healthy alternatives to the 'Full English!'	Healthy 'Fast Food' for lunch	Something naughty (but healthy and nice) for dessert
Fruit kebabs – let's start simple with chopping and kebabbing our favourite fruits	Couscous with vegetables – all you need is a mixing bowl, kettle, and lots and lots of fresh veg like spring	Healthy cookies – packed full of raisons to bring the sweetness, these cookies are a healthy

with some yoghurt and honey dipping sauce!	onions, peppers, red onions and herbs!	alternative to the sugary ones you buy at the Co-op!
Healthy muffins – packed full of seeds, nuts (for those that can) and dried fruit, these muffins are a sweet treat but without all the sugar!	Pasta with homemade tomato sauce – the student favourite, cooking pasta with a simple tomato sauce is one of the great first meals to cook	Chocolate dipped fruit – take some strawberries and orange segments and melt some chocolate, dip...and be patient!

### Skills and knowledge

Within these lessons children will learn how to:

- Use sharp knives for cutting safely
- How to safely work with boiling water and hot ovens/stove tops
- Measuring ingredients accurately
- The importance of cleanliness in cooking
- Why it's important to have separate chopping boards

### **Year 4 – If you have eggs, you have food.**

In Year 4, children will move on from healthy eating to explore a staple of British and global cuisine: the humble egg! Considered a life skill, learning how to cook eggs is not only economical, but also a source of nutritious protein that can be knocked up relatively quickly and simply. Not only will children learn the basic

approaches to cooking eggs, they'll learn how to improve them and flavour them for variety and taste.

<p>Frying eggs – what does 'cooked' look like? How can we season the egg whilst frying?</p>	<p>Scrambled eggs – taking the same ingredient but this time whisking, we can incorporate ingredients now such as cheese, spring onions etc...</p>	<p>Boiled eggs and soldiers – learning how to time cooking eggs so they are just runny to dip your soldiers into.</p>
<p>Omelettes – a great skill to learn as omelettes offer a vehicle for whatever is left in the fridge – last rasher of bacon; a couple of mushrooms; half a pepper; the end of some cheese.</p>	<p>Mini egg muffins – like a variation on a theme, mini eggs muffins can be baked in the oven and will take on a whole plethora of ingredients.</p>	<p>French toast – let's not forget that eggs can be used in sweet dishes too and this is an easy breakfast (or cheeky supper) to make at home.</p>

### Skills and knowledge

Within these lessons children will learn how to:

- Cook with hot fats
- Fine knife chopping/cutting skills/whisking
- Handle hot trays and pans safely
- Manage temperatures

### **Year 5 – How to indulge your savoury tooth**

In Year 5, children will build on their foundations from previous years looking at a variety of savoury staples that can be easily recreated at home to encourage the children to consolidate the

skills learnt in school and realise that cooking is easier than they'd thought.

<p>The glory of homemade bread...who doesn't want to be in a room with the fresh smell of baking bread? You can even make your own butter whilst you wait!</p>	<p>Pizza – simple</p>	<p>Picnic classics</p>
<p>Plaited loaves with extra ingredients – our second go on bread with a twist this time – literally! We also add ingredients to add flavour, e.g. olives or fruit</p>	<p>1.) Lesson 3 - Homemade pizza 2.) Lesson 4 - Puff pastry savoury tarts</p>	<p>3.) Lesson 5 - Savoury 'sausage' rolls/Veggie rolls  Savoury scones</p>

### Skills and knowledge

Within these lessons children will learn how to:

- Kneading dough and how yeast works
- The importance of accurate measurements including water temperature
- Whisking and beating
- Chopping and preparing a variety of vegetables

## Year 6 – Seasonality and how to access food all year round through preserving

In Year 6, children will look at seasonality and learn that although food is readily available all year round in our local Co-op supermarket, seasons within the UK dictate when fruit and vegetables are available. They'll visit local allotments, local suppliers and farms to learn more about seasonality and consider the issue of food miles when looking at the range of food available locally. They'll also learn how people would preserve food to enable them to have access to food all year.

Seasonality and my local suppliers	Preserving
<p>Children visit the Co-op and investigate where the food on the shelf comes from calculating food miles to arrive in the UK .vs. Valley Organics who will talk to the children about where there food comes from and why they source locally</p> <p>Children learn about which food is available in which of the seasons and create menus for home that cover food available now</p>	<p>How to make homemade jam/marmalade</p> <p>Pickling vegetables/fruit</p> <p>Making biltong (or beef jerky)</p>

### Skills and knowledge

Within these lessons children will learn how to:

- Cook with sugar over high temperatures
- Use specialist equipment in preserving foods, e.g. air dryers
- The importance of cleanliness in cooking, especially in preserving

# Project Based Learning

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Whilst at Riverside Junior School the children will have multiple opportunities to attempt, evaluate and refine the design process stipulated in the National Curriculum: Design – Make – Evaluate. They will be challenged with a variety of design briefs requiring them to engage in all facets of design and making in all manner of contexts, e.g. the home; leisure; enterprise and the wider environment.

## **Our curriculum promise – Project based Design and Technology**

*Year 3 – Design and create my own Christmas stocking (working with textiles)*

Learning to sew is an age old skill that not only teaches the children the ability to join and attach different textiles to each other, but also teaches them how to repair holes and rips in existing clothing. Creating their own Christmas stocking is the perfect vehicle to learn, practise and master this.

### Skills and knowledge

- The various stitching techniques
- How to measure and cut fabric into different sizes
- Using electric sewing machines



### Year 3 - The perfect chocolate box (understanding structures)

Building on their exploration of where chocolate comes from in their rainforest topic, the children will engage with the process of designing the perfect chocolate box. Where better to see this process on a large scale right on our doorstep? A trip to the Nestle factory in Halifax will show the manufacturing process on a huge scale.

#### Skills and knowledge

- How shape affects strength and integrity of the box
- How different materials have different properties
- How folds and creases can strengthen and stiffen more complex structures

### Year 4 – Design and create a children's board game incorporating an electrical circuit (linked to Year 4 Science understand use electrical circuits)

Children love board games, but do they understand how they work? Looking at some existing classics such as Operation, the children understand how electrical circuitry and science underpins a lot of the functions of the games they have been playing. Researching what their peers would like in a board game, the children design and make their own game...perhaps creating the next big hit at Christmas?

## Skills and knowledge

- How circuits can be used within products
- Fine craft knife skills with cardboard and other materials
- Hot glue gun handling

## Year 5 – Design and create a children's mechanical toy (linked to Year 5 Science forces and understanding pulleys and gears)

Building on last year's electronic board game focus and complimenting the history topic of Victorians and Science topic of Forces, Year 5 children will look at designing a toy that employs a mechanical element such as gears, pulleys or cams. Examining existing toys, this will be the first time the children can get hands on with hacksaws as they work with the material of wood to create their own mechanical toys.

## Skills and knowledge

- Safe use of hacksaws, braces and vices
- Sandpaper to create a smooth finish
- Measuring accurately
- Incorporating moving systems within toys, e.g. pulleys, gears and cams

## Year 5 – Complex frame structures – Dragon's Den Bird Hide Challenge

Consolidating the wood craft skills that were touched on making mechanical toys, and building on Year 3's chocolate box project, the second Year 5 project explores complex structures made from wood. Examining structures in real life contexts, e.g. bridges, children learn how shapes such as triangles and joins can be used to strengthen structures. Following a brief straight from the Dragon's Den, the children then design, build and evaluate a bird hide structure to encourage local wildlife to nest in the school grounds.

### Skills and knowledge

- Safe use of hacksaws, braces and vices
- Glue gun work
- How to join pieces of wood firmly and securely
- Measure accurately and consistently
- Varnishing to weather proof materials

## Year 6 – Combining different fabric shapes

Returning to the stitching skills started in Year 3, our Year 6 children create something personal to them out of fabric and other textiles to commemorate their time at Riverside School. They could create a bag or patterned throw/quilt that will be a keepsake in years to come. They will explore how existing products incorporate a variety of textiles, materials and shapes into their

design and explore the various ways these can be attached, e.g. stitching; patches attached using glue and a hot iron.

### Skills and knowledge

- Safe use of hot irons
- The various stitching techniques
- How to measure and cut fabric into different sizes
- Using electric sewing machines
- How to attaching separate fabric pieces together

## Real world problems and solutions and why the UK is a leader in the design field

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At Riverside Junior School we want our children to learn that excellent design stems from innovation and creativity. We also want them to be aware that in the UK we are blessed with some amazing and talented designers who have been pioneers in their respective fields. To top this all off, we recognise that a vital aspect of consolidating the skills and knowledge they're acquiring through our curriculum provision is allowing them creative freedom to use their imagination and ingenuity to solve real life/world problems.

### **Our curriculum promise – amazing designers in the UK and how we can take inspiration from them**



**James Dyson**

**(Year 4)**

James Dyson is a design pioneer within the UK whose products are now household names. The children will learn how Dyson's simple approach to the problem of never having a spare Hoover bag revolutionised this product forever.

Taking inspiration from this, the children in Year 4 will look into their own homes, talk to their own families about the products that they find frustrating and never quite providing them with the service or results they desire. Can they revolutionise this in the same way

that James Dyson did with the Hoover. Free to apply any of the techniques they've already learnt, let loose to go in any direction they choose, the children will compete with each other to come up with the next 'BIG IDEA'.

This will culminate in a Riverside Expo where local business people, dignitaries as well as friends and family are invited in to see the results. Who will be crowned winner of the James Dyson Innovation Award?



**Trevor Baylis**

**(Year 6)**

Trevor Baylis is an inspirational designer whose simple solution to a real world problem not only revolutionised communication but undoubtedly saved lives.

The children will discover how Baylis learnt about the problem of the spreading transmission of AIDS within Africa and how charities and medical professionals were struggling to provide effective information as to how this could be avoided due to the lack of electricity in villages and townships. His wind-up radio helped provide a practical and sustainable solution which had a huge impact on the fight to prevent further cases.

Taking inspiration from this design solution to a real world problem the children in Year 6 will work in groups, pairs, or individually, to try and find a design solution to a problem they feel we are facing in the 21<sup>st</sup> Century. Climate change? Drought? Flooding?

Much as they did in Year 4, the children in Year 6 will present their projects to an invited group of design professionals, politicians and friends and family in their own Expo event. Who will win the Trevor Baylis Award for Worldwide Innovation?