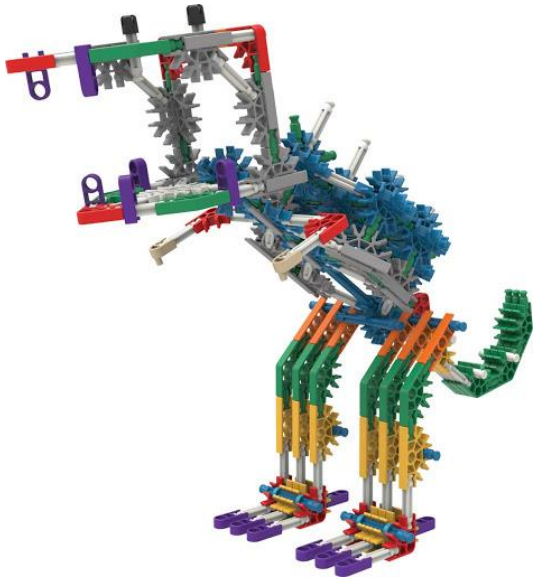
Whitehill Junior School Design and Technology Curriculum
Overview and information 2020

Our aim is for our pupils to become skilled and confident problem solvers. By harnessing their creativity and imagination, we want to help them look at problems logically and to help them break them down into smaller manageable problems that they can explore, solve and evaluate. These important life skills can be applied across all curriculum areas and on through their lives to help them solve real world and relevant problems. Through this subject area, they will gain a wide range of practical skills and subject knowledge. They will also draw from their understanding of mathematics, science, engineering, computing and art to help them tackle the problems they encounter. They will be encouraged to take risks, becoming resilient, resourceful and enterprising individuals. We evaluate past and present design and look at the impact it has on our wider world. By the end of their time at Whitehill, our pupils should be able to apply their Design and Technology skills to make informed and safe decisions when faced with real world situations.

Design and Technology is taught throughout the school, where possible as an integrated subject within our topic based curriculum, but some units will be taught discretely to fulfil the requirements of the National Curriculum.



Year 3	Design	Make	Evaluate	Technical knowledge	Cooking & nutrition
Rainforests topic Design, make & evaluate Rainforest Cocktails Design and make chocolates Design chocolate boxes Design and make rainforest themed recorder cases **Science** Food groups & eat well plate	Pupils will be taught to • indicate the design features of their products that will appeal to intended users • gather information about the needs and wants of particular individuals and groups • use computer-aided design to develop and communicate their ideas • generate realistic ideas, focusing on the needs of the user	Pupils will be taught to • select tools and equipment suitable for the task • apply a range of finishing techniques, including those from art and design, with some accuracy	Pupils will be taught to • consider the views of others, including intended users, to improve their work • refer to their design criteria as they design and make • how well products have been designed and made • where products were designed and made • whether products can be recycled or reused	Pupils will learn • that materials have both functional properties and aesthetic qualities • that materials can be combined and mixed to create more useful characteristics • that a single fabric shape can be used to make a 3D textiles product • that food ingredients can be fresh, pre-cooked and processed	Pupils will learn • that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world • how to use a range of techniques such as peeling, chopping, slicing, grating and mixing • that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the eat well plate • that to be active and healthy, food and drink are needed to provide energy for the body •

Year 4	Design	Make	Evaluate	Technical knowledge	Cooking & nutrition
Active Earth topic Buildings and how they are designed to survive disasters **History – Victorians** Soup **Romans in Britain** Architecture Workshop – Roman temples **Inventions topic** Design, make & evaluate moving toys (cams and followers) Study famous inventors and their creations. **Science** Electricity – buzzers, bulbs and motors **Computing** Programming and games	Pupils will be taught to • explain how particular parts of their products work • develop their own design criteria and use these to inform their ideas • share and clarify ideas through discussion • use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • make design decisions that take account of the availability of resources	Pupils will be taught to • explain their choice of tools and equipment in relation to the skills and techniques they will be using • order the main stages of making • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy	Pupils will be taught to • identify the strengths and areas for development in their ideas and products • use their design criteria to evaluate their completed products • why materials have been chosen and what methods of construction have been used • who designed and made the products • when products were designed and made • about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products	Pupils will learn • that mechanical and electrical systems have an input, process and output • the correct technical vocabulary for the projects they are undertaking • how mechanical systems such as levers and linkages or pneumatic systems create movement • how simple electrical circuits and components can be used to create functional products • how to program a computer to control their products • how to make strong, stiff shell structures • that food ingredients can be fresh, pre-cooked and processed	Pupils will learn • that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world • that seasons may affect the food available • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating and mixing

Year 5	Design	Make	Evaluate	Technical knowledge	Cooking & nutrition
K'Nex Challenge Structures **Space** Design and produce constellation themed cushions Design, make and evaluate space smoothies **Fit for Life topic** Investigate healthy foods and diets Design, make and evaluate a healthy savoury snack/dish. **Computing** Robotics and systems – Computer control systems	Pupils will be taught to • work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment • carry out research, using surveys, interviews, questionnaires and web-based resources • model their ideas using prototypes and pattern pieces • make design decisions, taking account of constraints such as time, resources and cost	Pupils will be taught to • explain their choice of materials and components according to functional properties and aesthetic qualities • produce appropriate lists of tools, equipment and materials that they need • accurately measure, mark out, cut and shape materials and components • accurately assemble, join and combine materials and components	Pupils will be taught to • consider the views of others, including intended users, to improve their work • critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make Investigate and analyse: • how well products work and how well products achieve their purposes • how much products cost to make • how sustainable the materials in products are	Pupils will learn • how to use learning from science to help design and make products that work • that materials have both functional properties and aesthetic qualities • how to program a computer to monitor changes in the environment and control their products • that a recipe can be adapted by adding or substituting one or more ingredients	Pupils will learn • that seasons may affect the food available • how food is processed into ingredients that can be eaten or used in cooking • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating and mixing • that recipes can be adapted to change the appearance, taste, texture and aroma • that different food and drink contain different substances – nutrients, water and fibre – that are needed for health

Year 6	Design	Make	Evaluate	Technical knowledge	Cooking & nutrition
Rivers topic Architecture Workshop – Bridges. **Science** Electricity – buzzers, bulbs, motors and switches Design, make & evaluate electric car toys. Micro-organisms Bread making.	Pupils will be taught to • describe the purpose of their products • identify the needs, wants, preferences and values of particular individuals and groups • develop a simple design specification to guide their thinking • use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • generate innovative ideas, drawing on research	Pupils will be taught to • select materials and components suitable for the task • formulate step-by-step plans as a guide to making • accurately apply a range of finishing techniques, including those from art and design • demonstrate resourcefulness when tackling practical problems • use techniques that involve a number of steps	Pupils will be taught to • identify the strengths and areas for development in their ideas and products • evaluate their ideas and products against their original design specification Investigate and analyse: • how well products meet user needs and wants • how innovative products are • what impact products have beyond their intended purpose	Pupils will learn • how to use learning from mathematics to help design and make products that work • the correct technical vocabulary for the projects they are undertaking • how mechanical systems such as cams or pulleys or gears create movement • how more complex electrical circuits and components can be used to create functional products • how to reinforce and strengthen a 3D framework	Pupils will learn • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source