

Year Group: 4 Term: Summer

Challenge pack

Crazy Contraptions

Learning Challenge

How can we design a product which solves a problem?



Class texts—whole class reading, extracts, thematic books

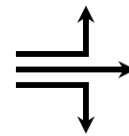
Main texts for planning:



Additional books from book web:

Science Comics—Robots and Drones, Inventions: A Children's Encyclopaedia, Girls Think of Everything

Cognitive skills / Meta-learning— specific teaching examples to use in learning



What have we learned from inventions in the past? How have they been helpful/ positive? What are the draw



Children will use their knowledge of contraptions to carefully consider and design their own contraption.

Hooks or memorable experiences

Think Tank visit— children will visit the Think Tank to explore and investigate various gadgets and contraptions practically.



Challenge outcome—what will the outcome look like to demonstrate learning?

Children will share their understanding of how designs and inventions have been created and changed over time that solved problems or changed the world.

Killer Questions—those asked to measure understanding of pupils

What are some of the most famous inventions through time that have taken place and who were they created by?

Describe how the Industrial Revolution caused a major change for people in the past? What inventions were created.

Where in the UK have different industries developed? Which designs or creations are different cities famous for?

Year group	4	Term	Summer	Challenge Pack	Crazy Contraptions—How can we design a product which solves a problem?		
SUBJECT FOCUS (delete as required)		Children will learn about / will know WHAT? (Declarative knowledge)		Children will know HOW TO...? (Procedural knowledge)		Prior learning (Schemata)	Vocabulary
History		<ul style="list-style-type: none"> Significant turning point in British history – the inventions of key products, the Industrial revolution, railways and the car. Reasons and impact with changes. Timeline of inventions and inventors through history Historical facts and opinions about inventors and inventions 		<ul style="list-style-type: none"> H2.1c Sequence time periods studied to create a timeline through history H2.1d Use understanding of specific time periods to create an identified timeline H2.2c Identify and give reasons for historical changes and events H2.3b Identify changes, cause and impact at the time of events beyond our living memory H2.3c Make connections and contrasts over different periods of time H2.3d Differentiate between fact and opinion 		2 periods of Wider world history focus <ul style="list-style-type: none"> Ancient Egypt Mayan civilization Key dates, people and events associated with these periods. What specific artefacts tell us about the time period. Key changes between these periods, modern day. Inventors related to flight e.g. Wright Brothers—Year 2	Industrial revolution Victorian Birmingham Railways, Steam engine Factories, workhouses Canal system Austin cars, Mini cars Alistair Graham Bell, telephone inventor Inventor Invention
Geography		<ul style="list-style-type: none"> Name and locate countries and cities of the UK Identify human and land use patterns un the UK and changes over time Use the 8 points of a compass, 4 figure grid references and keys (as inventions for working out locations) 		<ul style="list-style-type: none"> G2.1b Name and locate countries and cities of the UK, geographical regions and their identifying human and physical characteristics, key topographical features (including hills, mountains, coasts and rivers), and land-use patterns G3.3b Identify human and land-use patterns of the countries, regions and cities of the UK, understand change over time G2.4b Use the eight points of a compass, four figure grid references, symbols and key (including the use of Ordnance Survey maps) to build their knowledge of the United Kingdom and the wider world 			England, Northern Ireland, Scotland, Wales, United Kingdom London, Birmingham, Cardiff, Edinburgh, Belfast Industrial, urban, city, settlement Rural, land use OS Map Directions, North, East, South West Grid references
RE		<ul style="list-style-type: none"> Five Pillars of Islam and how they make a difference to a Muslims way of Living The importance of the prophet Muhammad to Muslims 		<ul style="list-style-type: none"> Identify and describe the specific core beliefs and concepts of religions studied Describe how people show their beliefs in how they worship and the way they live 		Y3– Religious festivals Values Y4 Aut– What kind of world did Jesus want, Our ideal world	Journey, guidance, Five Pillars, challenges, comfort, qualities, leaders, discipline, community
Art		<ul style="list-style-type: none"> Sculpture - making and design (linked to DT) Which artists work with manmade materials e/g/ plastic, metal etc? How do artists make art work by reusing materials that might otherwise be seen as waste? 		<ul style="list-style-type: none"> A3.4a Plan and make sculptures using a range of natural and manmade resources with increasing accuracy and success in joining together materials. A3.5a Adapt work in response to personal and group critique, describing how they will develop it in future. 		<ul style="list-style-type: none"> Painting— styles and artists influenced by historical time periods Style of paintings—side portraiture and figures, size of figures to represent status Use of colours related to symbolism 	Sculpture Design Prototype Materials Join, Combine Natural Manmade Critique, adaptation
Design Technology		<ul style="list-style-type: none"> Prototype of product – linked to Art (3D & Sculpture) and Science (Electricity) Designs that have changed history—what and why were these created? Link to history— Industrial revolution Designing a product that solves a problem or reuses and recycles—link to art 		<ul style="list-style-type: none"> D2.1b Explain how my ideas meet set design criteria D2.2b Use technical understanding of electrical components to complete a task D2.4b Describe how existing products with a similar design brief have been effective at their purpose D3.4a Explain how key design events have had effective impact in the world and met their design purpose 		<ul style="list-style-type: none"> Replicas of artefacts—key historical artefacts that can be imitated through design techniques 	Design criteria Electrical circuit, bulb, switch, buzzer, wires, battery Product Change Need

Year group	4	Term	Summer	Challenge Pack	Crazy Contraptions—How can we design a product which solves a problem?		
SUBJECT FOCUS (delete as required)		Children will learn about / will know <i>WHAT? (Declarative knowledge)</i>		Children will know HOW TO...? <i>(Procedural knowledge)</i>		Prior learning (<i>Schemata</i>)	Vocabulary
ICT and Computing (including apps and digital pencil case)		<ul style="list-style-type: none"> • Programming—understanding how to write a sequence of code that creates commands that can be followed. • Computer networks—what is the internet? What is network? Link to history—who invented the internet? What has it made possible for us today? 		<ul style="list-style-type: none"> • C2.1a Understand the opportunities computer networks offer for communication • C2.3a Write programs that accomplish specific goals • C2.3b Within a sequence, use repetition in programs • C2.3c Understand the notion of input and output • C2.3d Use logical reasoning to explain how some simple algorithms work • C2.3e Introduced to the notion of variables • C2.3f Use logical reasoning to detect and debug simple algorithms 		<ul style="list-style-type: none"> • Online Safety • Design and create 	Network, internet, World Wide Web Sequence, instructions, code, algorithm Repetition Input, output Reason, debug Variable
PSHE		Best we can be – uniqueness, personal strengths, values and pathways		<ul style="list-style-type: none"> • PSHE C2.11 I can identify what makes me unique • PSHE B2.4 I can describe the importance of expressing emotions • PSHE C2.2 I can explain how good values and behaviours can make someone a positive person or hero • PSHE C2.3 I can discuss the idea of ‘personal strengths’ and what this means • PSHE C2.1 I can consider the different pathways that people might take in life 		Keeping yourself safe (ICT link) Responsibility for behaviour	Uniqueness, individual, characteristics, personality, traits Emotions, values, behaviours Hero, role model Strengths, weaknesses, developments Life choices, pathways, career, motivation