WE ARE ENGINEERS: Embracing Technology to Solve problems

Focus Overview

YEAR 1: Toy Robots

At Our Lady and St. Hubert's, home, school and parish work together, knowing that God is with us in all we do

We are Engineers: Embracing Technology to Solve Problems
Year 1 –

In **DT** children will create a range of structures using the most appropriate materials and learn how to use this to solve possible problems. They will create a toy using different materials which can move. In **History** children will look into how things have changed over time. Children will use a range of materials to look at aspects of the past and identify differences between the past and present. In **Computing**, children will exploring algorithms and how to programme a digital device. They will learn how to input simple instructions using mainly Beebots. In **English,** we will be recapping basic grammar elements such as full stops and capital letters. Children will learn about the use of capital letters in pronoun and how to use exclamation marks in their writing. We will focus of spellings in phonics and class to make sure that children are applying their phonics knowledge in their writing.

Theme Impact

Children will look at how technology has changed the world around us and the impact it has on their daily lives. Children will identify change between objects from the past and present and the reasons for these changes.

Catholic Social Teaching

Children will focus on human dignity linked to inventors. How are inventors like God? What did God create? Children are to make links to humans being created in the image of God. What special gifts and talents do inventors have? How has these talents changed the world for the common good?

Curriculum Drivers

Design and Technology

National Curriculum Objectives

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.
Select from and use a range of tools and equipment to perform practical tasks such as 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.
Explore and evaluate a range of existing products.
Evaluate their ideas and products against design criteria.
Build structures, exploring how they can be made stronger, stiffer and more stable.

Knowledge and Skills Progression

R1- Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
R2- Children use what they have learnt about media and materials thinking about uses/purposes and properties.
R3- Children represent their own ideas, thoughts and feelings through discussion and drawings.

D1- Talk about what they want to make, in relation to the design brief and their research.
D2- Draw a labelled picture of their product, which may include parts, components, materials.
D3- Choose the materials/ingredients/tools they will use, from a selection.
D4- With support, write a list of the materials/ ingredients/tools they will need.

MC1- Cutting- Mark materials before cutting and sometimes measure. Cut paper and other materials safely and with increasing accuracy.
MC2- Joining- Begin to choose the most effective joining methods for the task/materials. Use simple components, such as split pins.
MC3- Testing- Test their product as they work, to see if it meets the requirements of the intended user.
MC4- Improving- Apply their knowledge of materials to make a structure stiffer/ more stable as they work.
MC5- Extra component- explore and use a simple mechanism (levers, axels…)

E1- Positive- Describe what went well and which aspects of their product they are pleased with.
E2- Critique- Describe anything that didn't work as well and any changes they had to make.
E3- Audience- Discuss what the intended user might think about the product.
E4- Improve- Suggest how their product could be improved.

History

National Curriculum Objective

How things have changed over time - have an understanding of chronology

Knowledge and Skills Progression

E3: Look at objects from the past and ask questions i.e, "What were they used for?" and try to answer.
O2: Use timelines to order events or objects.
O3: Tell stories about the past.
O4: Talk, write and draw about things from the past.
H1: Look at books, videos, photographs, pictures and artefacts to find out about the past.
C3: Order a set of events or objects

Application

How can we create a programmable robot?

Children to create sculptures of robots and input algorithms in order to programme the actions of a moving robot.

Wider Curriculum Opportunities

Writing	Reading
Traditional Tale – Narrative • Linked to story – T4W retell Recount – Non-Fiction • Recount of trip to toy museum	**The velveteen Rabbit** **Toys in Space** Dogger Stanley Stick

Computing – application of previously taught skills

Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions.

Write and test simple programs.

Use logical reasoning to predict the behaviour of simple programs.

CS1 Know that an algorithm is a sequence of steps for solving a problem

CS2 Robots and computers can be programmed

CS3 Knowledge of Beebots' functions

CS4 A computer or robot will follow instructions exactly

CS5 Problems are called bugs

CS6 Finding and fixing bugs is called debugging

CS7 There may be different algorithms that solve the same problem

Enrichment

Trip to toy museum

Lego land – Birmingham

Home Learning

Children will:

Write a fact file about their favourite toy at home (bring their toys into school)

Design their own robots

Research about toys from the past and compare to their toys now

Evaluation Notes

Stand-alone objectives to be covered this term

PE

Nation Curriculum Objectives

- Extend agility and coordination through throwing, catching and retrieving
- Participate in simple hit, catch and run games
- Score point through sending balls and running
- Extend co-ordination for hitting
- Participate in simple sending and receiving games
- Score point through sending balls suing hitting skills to correct areas

Knowledge and Skills Progression

Hit Catch Run
Able to identify when a point has been scored and keep count of score
Can choose where to send the ball to maximise chance to score
Can make choices where to stand in the field to restrict runs scored
Catch a medium sized ball thrown over a short distance
Intercept, retrieve and stop a beanbag and a medium-sized ball with some consistency
Track balls and other equipment sent to them, moving in line with the ball to collect it
Run between bases to score points
Retrieve and return a ball to a base
Use a range of sending skills to put ball into space
Able to self-feed ball to hit off hand and strike ball off cone
Work collaboratively to score runs showing encouragement and support
Show awareness of team mates fielding positions to restrict runs in a simple game scenario
Key vocab: rolling, retrieving, throw, catch, aim, target, hit, batting, fielding.

Send and Return
Identify space to send a ball into
Can describe how they worked with their partner to send and receive
Able to send an object with increased confidence using hand or bat
Move towards a moving ball to return with hand or bat
Score points against opposition over a line/net
Select and apply skills to win points
Chase, stop and control balls and other objects such as beanbags and hoops
Track balls and other equipment sent to them, moving in line with the ball to collect or return
Work with a partner to send and return an object and play in a simple rally
Play cooperatively in a game situation
Key vocab: Hit, collect, stop, net, throw, roll, strike, catch, bowl, feed, pick up, batter, hitter, forehand, backhand, court

Cooking in the Curriculum

Pitta Pockets