WE ARE ENGINEERS: Embracing Technology to Solve Problems

Focus Overview

YEAR 3: Moving Monsters

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 3 – Moving monsters

This half term, we will be turning into experts in the field of Physics. In our **Science** lessons, children will be investigating a range of forces, focusing particularly on magnets. Lessons will be hands on; engaging the children's curiosity and enhancing their scientific understanding. In **Design & Technology,** children will be linking all of their STEM learning together, by investigating basic pneumatics. They will design and make their own 'moving monster,' relying on a pneumatics system to bring their monster to life. In **Computing,** we will be using the software 'Scratch' to create a digital animation, using various algorithms and codes. In **English**, we will be moving to a narrative unit, learning about character description for their own monster. We will also explore and create our own clerihew poems.

Theme Impact

Through this unit, children will draw on skills from a wide range of areas, but particularly the STEM subjects– which the children really enjoy. Children will understand the term 'engineer' and how important this role is in our future. Through the 'design, make, evaluate' process, children will use their critical thinking skills to evaluate their designs and make improvements where necessary. This will also involve resilience and perseverance– two key areas of 'Character', one of our 6Cs.

Catholic Social Teaching

Pupils will grow to become **curious** about everything and **active** in their engagement with the world, striving to change what they can for the better.
Our RE lessons and Collective Worship will encourage children to develop their curiosity about the universe and all human activity. We will also help them take increasing responsibility for their own learning and provide opportunities for them to be active in the life of the school, the Church, and the wider community.

Our focused Catholic Social Teaching for this half term is **Family and Community**. Through this, children will recognise family as a foundation for society and its role in fostering well-being of its members. The teaching also highlights the responsibility of individuals and communities to support and care for one another, particularly those who are vulnerable.

DT

Nation Curriculum Objectives

Green highlighted means Non Negotiable

Design

Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or group

Generate, develop, model and communicate their ideas through discussion and annotated sketches

Make

Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately

Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate

Investigate and analyse a range of existing products

Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

Understand how key events and individuals in design and technology have helped shape the world

Knowledge and Skills Progression

DESIGN

D1- Use their research to develop some of their own design criteria.
D2- Draw a fully labelled sketch/diagram of their product, including some measurements.
D3- Choose the materials/ ingredients /tools they will use, based on their suitability for the task.
D5- Indicate where components will go (Pneumatics)
D6- Order the main stages of their making process

MAKE

MC3- Testing- Test their product as they work, making informed adjustments to ensure their product meets the design criteria.
MC4- Improving- Apply their prior knowledge and understanding to make structures stiffer/ more stable as they work. Check design criteria as they work.
MC5- Combine a number of components together in different ways (Pneumatics)

EVALUATE

E1- Positive- Identify and discuss the strengths of their product.
E2- Critique- Identify any areas for development/ improvements that could be made.
E4- Improve- Suggest how their product could be improved.

Science

National Curriculum Objectives

- compare how things move on different surfaces
- notice that some forces need contact between two objects, but magnetic forces can act at a distance
- observe how magnets attract or repel each other and attract some materials and not others
- compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- describe magnets as having two poles
- predict whether two magnets will attract or repel each other, depending on which poles are facing

Knowledge and Skills Progression

Working Scientifically

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings

Application

Linking all of this learning together, children will share their final creations to an audience. They will create an explanation text to inform others of the science behind the creation and how it works. We have chosen Year 2 as our audience (as a way to get them excited about coming to Year 3) so the children will need to think about how they present to a younger age group.

Wider Curriculum Opportunities

Writing	Reading
SPAG basic skills to feed in- non negotiables Narrative – shared writes on character and setting description. Character description of monsters Narrative/Poetry- Clerihew	Finish **The Butterfly Lion** unit **The hundred mile an hour dog** Chosen as one of our class reading challenge texts- and the need for the children to develop their pace and fluency- linked to longer passages of text.

Computing

See separate unit plan below

Enrichment

Home Learning

Evaluation Notes

Stand-alone objectives to be covered this term

PE

National curriculum

Swimming

Swimming and water safety All schools must provide swimming instruction either in key stage 1 or key stage 2. In particular, pupils should be taught to:

- swim competently, confidently and proficiently over a distance of at least 25 metres
- use a range of strokes effectively [for example, front crawl, backstroke and breaststroke]
- perform safe self-rescue in different water-based situations.

Beginners
Swim a short distance between 5 and 20 metres unaided using one consistent stroke
Propel themselves over longer distances using swimming aids
Move with more confidence in water including submerging themselves fully
Enter and exit the water independently
Float and regain to standing confidently
Push and glide and transition from glide to stroke
Attempt skill of sculling and use to propel themselves
Apply basic arm and leg action to 'doggy paddle'

Intermediate
Swim over greater distance of 10 and 20 metres with confidence in shallow water
Begin to use basic swimming techniques including correct arm and leg action
Attempt to use basic breathing patterns when swimming
Enter and exit the water in a variety of ways
Work in collaboration to perform group challenges such as group floats
Submerge, sink, roll and rotate underwater
Attempt surface dive

Advanced
Bring control and fluency to at least two recognised strokes
Compete as part of a team
Implement good breathing technique to allow for smooth stoke patterns
Have attempted personal survival techniques as an individual and a group with success
Link lengths together with turns and attempt a tumble turn in isolation and during stroke
Surface dive and travel to the bottom of the pool to collect objects
Work up to crouching dive
Work in pairs to refine stroke technique and suggest ways they can improve
Swim competently, confidently and proficiently over a distance of at least 25 metres

Computing

Scratch- programming

Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
Use sequence, selections and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs.
Use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs.

- CS1 Know that a computer will run a program in sequence (step-by-step in order)
- CS2 Know that repetition can make algorithms more efficient
- CS3 That a chunk of code can be repeated a set number of times or forever
- CS4 Know how to use control blocks for repeat and forever in Scratch
- CS5 Know how to use motion blocks in Scratch
- CS6 Know how to create algorithms as visual plans
- CS7 Know how to step through code, checking working parts, to find where errors occur

Art

National Curriculum Objectives

- to create sketch books to record their observations and use them to review and revisit ideas
- to improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay]
- about great artists, architects and designers in history

Knowledge and Skills Progression

A1 Study the work of a range of great artists, craft makers and designers and understand the historical and cultural development of their art forms.
A2 Evaluate and analyse creative works using the language of art, craft and design.

E1 create sketch books to record their observations and use them to review and revisit ideas.
E2 record and explore ideas from first hand observations, experience and imagination and ideas for different purposes.
E3 question and make thoughtful observations about starting points and select ideas for use in their work, recording and annotating in sketchbooks.
E4 think critically about their art and design work.

C1 experiment with a range of collage techniques such as tearing, overlapping and layering to create images and represent textures.
C2 use collage as a means of collecting ideas and information and building up a visual vocabulary.

Music

Recorders

To know the key features of South African Gumboot music.
To understand the key features of staff notation including: clefs, key signatures, time signatures, minims, semibreves, crotchets, rests, and how pitch is shown
To know the correct technique for playing tuned percussion instruments.

MFL

Vegetables (E)
Skills based assessment at the end of unit. Tracking & Progression Tool to be used to input data.
Les aubergines, Les épinards, Les oignons, Les courgettes, Les tomates, Les haricots verts, Les petits pois, Les champignons, Les carottes, Les pommes de terre, Un kilo de… / d'… Un demi kilo de… / d'… Je voudrais... S'il vous plait, Et, Bonjour, Je peux vous aider? C'est toût? C'est combien? Merci, Au-revoir, Dans mon panier j'ai...

Speaking
·Speak with others using simple words, phrases and short sentences
• *recall, retain and use vocabulary*
• *ask and answer questions.*
· Speak aloud familiar words or short phrases.
• *speak clearly and confidently*
· Use correct pronunciation when speaking and start to see links between pronunciation and spelling.
·Name 10 fruits and say "I like…" and I don't like…" plus a fruit

Listening
·Listen and respond to familiar spoken words, phrases and sentences (e.g. simple instructions).
•*repeat words and phrases modelled by the teacher*
• *remember a sequence of spoken words*
• *use physical response, mime and gesture to convey meaning and show understanding.*
·Match sound to picture / word / phrase. Understanding slightly longer text.

Reading
·Recognise and understand familiar written words and short phrases (e.g. basic nouns and first person "I" form of simple verbs) in written text.
• *understand words displayed in the classroom*
• *identify and read simple words*
• *read and understand simple messages.*
· Read aloud familiar words or short phrases.
• *read aloud a familiar sentence, rhyme or poem.*
·Recognise how sounds are represented in written form.
• *pronounce accurately the most commonly used characters, letters and letter strings*
·Match key nouns to picture / word / phrase in English. Short and simple reading tasks.

Writing
·Write some familiar simple words from memory or using supported written materials (e.g. familiar nouns).
• *write simple, familiar words using a model*
• *write some single words from memory.*
• *create name labels and complete differentiated worksheets*
·Spell all new language as accurately as possible via tasks in each lesson.

Grammar
• Start to understand the concept of gender.
Masculine/Feminine
•Indefinite article with fruits. How to articulate a simple opinion. "I like…" and "I don't like…" plus the fruit in plural form.
•Plural use of the definite article plus high frequency structure "I would like…" plus first person singular of verb "to have".

Cooking in the Curriculum

Pizza