


Dereham Church Infant and Nursery School- Science

	Year group: Nursery	Area/topic: Forces
<p><i>(Objectives from NC/ELG/Development matters)</i></p> <ul style="list-style-type: none"> *Explore how things work. (Understanding the world) *Explore and talk about different forces they can feel. (Understanding the world) *Talk about the differences between materials and changes they notice. (Understanding the world) 		

Prior learning	Future learning
<p>*Repeat actions that have an effect. (Birth to three)</p>	<ul style="list-style-type: none"> *Explore the natural world around them. (Reception) *Describe what they see, hear and feel whilst outside. (Reception) *Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials) *Compare how things move on different surfaces. (Y3 - Forces and magnets) *Observe how magnets attract or repel each other and attract some materials and not others. (Y3 - Forces and magnets) *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. (Y3 - Forces and magnets) *Describe magnets as having two poles. (Y3 - Forces and magnets) *Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3 - Forces and magnets) *Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. (Y5 - Forces)
<p><i>Working scientifically & encouraging scientific enquiry</i></p>	

Comparative testing

- *Compare the path of different wind-up toys.
- *Compare how far different wind-up toys move.
- *Compare the speed and direction of gears.
- *Compare how easy or hard it is to lift an object with or without a pulley.
- *Compare how easy it is to ride a scooter or bike on different surfaces.

Classification

- *Sort objects according to whether they float or sink.
- *Sort objects/materials according to whether their shape can be changed.

What pupils need to know or do to be secure

Key knowledge and skills	Possible evidence
<p>Children will be taught to:</p> <ul style="list-style-type: none">*Push floating objects under the water and encouraged by an adult to talk about how it feels the further they push the object. E.g. Balloons, tennis balls etc.*Explore what happens if they release an object under water.*Explore how objects/materials can change through pulling, pushing, twisting, bending etc.*Join materials.*Explore magnets of different shapes and sizes.*Talk about how magnets push away or pull towards each other.*Use bikes and scooters on different surfaces and ramps.*Explore using springs of different sizes, both compression and extension springs.*Predict if items will float or sink.*Talk about how the shape of objects can be changed.*Talk about how materials can be joined together.*Talk about how toys containing springs, wind-up toys, pulleys and gear toys work.*Encouraged to ask questions about forces such as 'What happens if I...?'	<ul style="list-style-type: none">*Can identify objects that float and sink.*Can identify objects whose shape can be changed and talk about how they changed their shape.*Can describe what they feel when exploring magnets.*Can describe what they feel and see when pushing, pulling, bending and twisting objects e.g. springs, elastics, wind-up toys, gears, pulleys etc.*Can describe what they feel when riding bikes and scooters on different surfaces and ramps.
<p>Key vocabulary</p> <p>Object, float, sink, water, up, down, top, bottom, push, pull, magnet, spring, squash, bend, twist, stretch, turn, spin, smooth, rough, fast, slow</p> <p>Expose children to supplementary vocabulary such as: Rising, falling, attract, repel, faster, slower, pulley, gear, elastic</p>	
Common misconceptions	Books linking to this area

Some children may think:

- *Big objects sink
- *Heavy objects sink
- *An object such as an ice cube which is partially submerged is floating and sinking at the same time.

Traditional stories and nursery rhymes

- *Wind the Bobbin Up

Other texts

- *And Everyone Shouted "Pull" by Claire Llewellyn
- *Oscar and the Cricket by Geoff Waring
- *Newton and Me by Lynne Mayer
- *Astrokittens: Cosmic Machines by Dominic Walliman & Ben Newman
- *The Little Red Train: The Runaway Train by Benedict Blathwayt
- *Dig Dig Digging by Margaret Mayo
- *It's Only Stanley by Jon Agee

Memorable first hand experiences

- *Children to be visited by a builder or plumber.
- *Bring toys to school to share with others.

Opportunities for communication

- *Children to be given opportunities for communication with partners, groups and whole class to discuss as completing practical activities.
- *Adults to model and encourage discussion during play.

DCINS Reasonable adjustments for pupils with SEND

<p>Communication and Interaction</p> <ul style="list-style-type: none">*Visual aids, pictures of equipment with words labelled, word mats with pictures for key words in that lesson.*Freedom to explore scientific equipment and investigate in own way.*Hands on experiences to encourage communication and interaction with others.*Pre teaching any new vocabulary.	<p>Cognition and Learning</p> <ul style="list-style-type: none">*Opportunity for lots of hands on exploration and verbally sharing thoughts and ideas.*Freedom to explore scientific equipment and processes.*Pre teaching new vocabulary or concepts.*Activities adapted if needed for safety and ease.*Visual aids, pictures of equipment, mats with key words and pictures*Learning recorded through photos and adult quotes, children not expected to write for recording their understanding.*Using working walls to aid learning and remind of previous learning.
<p>Social, Emotional and Mental health</p> <ul style="list-style-type: none">*Awareness of individual needs, any potential triggers within the curriculum and the child's background.*Pre prepare children for any activity they could find triggering or difficult in some way.*Practical activities or experiments to be completed within a smaller group or 1:1 if needed.*If the class are sharing their learning within a large group, take the child in a smaller focus group if they struggle with social situations.*Adjustments made where needed to suit individual.	<p>Sensory and Physical</p> <ul style="list-style-type: none">*Adult support with any practical activities.*Awareness of the individual's likes or dislikes and their own reactions to sensory activities.*If a child enjoys sensory activities, then plan for this wherever possible within the lesson.