Beech Hill Primary School Knowledge Organiser

Topic:	Year group	Term
Forces	3	Summer

Background knowledge

Effective ways to demonstrate pull forces include pulling a door or pulling a string to open a blind. Pushing a door closed or kicking a ball are effective ways to demonstrate push forces. Children should categorise examples of a force as a push or pull and be given the opportunity to exert forces themselves. To prepare children for investigating magnetism, it is important to introduce push and pull forces as "contact forces"

Children should recall that forces are pushes and pulls, and a contact force affects objects that are touching. Friction should be introduced as a contact force which pushes against a moving object. To demonstrate that friction works in the opposite direction to the moving object, show objects stopping slowly on a smooth surface and stopping quickly on a rough surface. Images such as slipping on a wet floor, ice skating and rolling a ball across gravel would help children to add context to their understanding.

Children should be provided with a toy car, a rough material, a smooth material and a ramp. Carpet cut-offs and sandpaper are useful materials to demonstrate a rough surface. The ramp can act as the smooth surface. Children are not expected to use the terms "variables" in Year 3, but should identify what is changing, what is being measured and what is kept the same.

What should I already know?

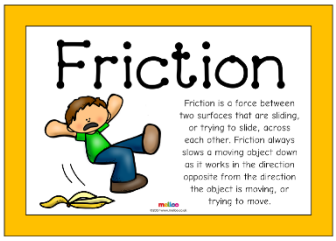
In Year 2, children looked at changing the shape of some objects through squashing, twisting, bending and stretching. In this small step, children are introduced to forces for the first time. Children should define forces simply as a push or a pull. Give them opportunities to observe push and pull forces in action.

National Curriculum Objectives / Key Skills	The Journey

Compare how things move on different surfaces. **<u>Working scientifically</u>** Identifying differences, similarities or changes related to simple scientific ideas and processes. Using straightforward scientific evidence to answer questions or to support their findings. Setting up simple practical enquiries, comparative and fair tests. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. **<u>Scientific enquiry</u>** 	1. Explore forces 2. Friction 3. Plan – friction experiment 4. Investigate – friction experiment

Outcomes
An overview of what children will know / can do Working towards: I can recognise some push and pulls as forces. I can observe how things move on different surfaces. I can make measurements with support recording them in tables. Expected: I recognise push and pulls as forces. I can compare how things move on different surfaces. I can make accurate measurements recording them in tables and bar charts stating what they show.

Exceeding: I recognise push and pulls as forces recognising the direction of the force. I can compare how things move on different surfaces and explain my ideas using the word friction. I can make accurate measurements recording them in tables and bar charts stating clearly what they show.

Key Vocabulary	Timeline / Diagrams
Contact force- forces that act when 2 objects touch each other e.g. friction. Friction- the resistance of movement when there is a contact between 2 surfaces. Force- a push or a pull or a combination of these. Gravity- The force which pulls objects towards the earth. Resistance- a force which slows down a moving object or vehicle.	

Key people / places
Toyologist, magnet engineer. (STEM career.)

Assessment questions / outcomes
• What will you measure? • On which surface did the toy car travel furthest and why? • On which surface did the toy car travel the shortest distance and why? • Why is it important to use the same toy car each time? • Why is it important to keep the ramp at the same height each time? • What other questions could you investigate? • What equipment will you use? • What different surfaces could be used? • What will be measured? • What will be changed? • What will be kept the same? • How will you record your results? • How could the results be checked to make sure that they are correct? • What is a force? • What is an example of a push force? • What is an example of a pull force? • What is friction? • What type of surface has low friction? • What type of surface has high friction? • When is friction useful? • When is friction not useful? • What are contact forces? • What is a force? • How can we describe a force? • Is kicking a ball a push or a pull force? • Is rolling a pen across the desk a push or a pull force? • What is an example of a pull force? • What is an example of a push

force? • What can forces cause objects to do? • How can a push force be useful? • How can a pull force be useful?