

Year 2 – Spring 2 – ‘Squash, Bend, Twist, Stretch – Materials’

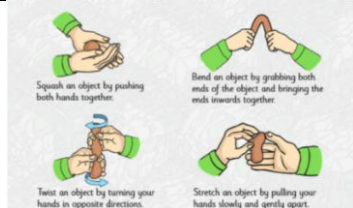
NC Science –
Pupils should be taught to:

The uses of different everyday materials so that they become familiar with how some materials are used for more than one thing or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass). They should think about the properties of materials that make them suitable or unsuitable for particular purposes and they should be encouraged to think about unusual and creative uses for everyday materials

- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Vocabulary – shape, change, twist, squash, bend, stretch, properties, strong, tear, rip, weight, grams, bar chart, results, material, properties, rigidity, flexibility, concertina,

Squashing, Bending, Twisting and Stretching



I can investigate how shapes of objects made from some materials can be changed TAF 2.

I can explore whether objects are opaque, transparent or translucent TAF 1

Starter: ask chn this question exploring their understanding – Do you know what any of these words mean? TRANSPARENT/ TRANSLUCENT /OPAQUE

In small groups' chn to explore sorting materials into the three groups – practically. PowerPoint to support understanding and knowledge.

ks1 transparent/ translucent, opaque – video – www.Youtube.com

Explore the purpose of these three qualities transparent, translucent and opaque.

Pose a question – which material would be best for...

Chn to explain -Why?

What materials can you name?
What properties do they have?

Pose questions: How do objects made from different materials change shape?

Plan an investigation: show chn equipment – as a class compose 4 steps to completing the experiment including variables – **Pick a variable** –fair test, testing more than one material and use of same force.

Predict an outcome: Using knowledge so far and understanding action from play-doh make some predict linked to stretch, twist, bend and squash.

Produce results: chn to be provide table to complete whilst testing linked to four areas.

Provide a conclusion Chn explain their recommendation in writing based on their findings using prompt questions:-
What was the most changeable object on your table?

Which was the least changeable object on your table?

Why do you think this is?

Can you think of 3 objects that can't be squashed, bent, twisted or stretched?

What have you noticed about all the objects that don't change shape?

What do you notice about all the objects that change shape?



I can research structure of 'Iron Bridge'

CT to introduce the structure of 'Iron Bridge' give children 5 picture/ photographs of 'Iron Bridge' – structure and design. In groups children to use oracy skills to discuss their thinking and understanding (mind map ideas).

Pose questions: Which is the strongest paper? (linked to lesson 4)

Chn to work in small groups to research English heritage of Iron Bridge linked to its construction and structure. Chn to have information packs and iPad (create QR code to access website).

http://www.bbc.co.uk/history/british/victorians/iron_bridge_01.shtml – from www.bbc.co.uk

History link – local history

Video explaining the structure and construction – www.Ironbridge/construction.com

Provide a Conclusion: Chn to summarise their learning of structures of a bridge.



I can investigate how to strengthen paper TAF 2

Pose questions: Which is the strongest paper?

Plan an investigation: chn to choice own equipment based on learning knowledge – as a class compose 4 steps to completing the experiment including variables– **Pick a variable** –fair test, weight of Lego character, height or length

Predict an outcome: Using knowledge from their research lesson – chn to predict which type of paper will be the strongest.

Produce results: Chn to present result in a bar chart based on strength.

Provide a conclusion

Chn explain their recommendation in writing based on their findings and explain which paper they will be using to make a paper structured bridge in the next lesson

Questions to support:

What supported the strength of structure?

Did the shape support the strength?

Did the length of the structure effect strength?

How did you strength the paper – twist, bend or squash?

[Teacher background information on the strongest paper](http://www.newscientist.com) – from www.newscientist.com



I can use my knowledge to construct a structure of bridge out of paper.

Using your knowledge of paper strength and rigidity, build a paper bridge strong enough to hold a Lego characters.

Chn to think about their knowledge of shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Predict outcome: chn to predict why their design will be successful.

Chn to construct their bridge in small groups. Take photography for evidence of bridge design. Chn to test the strength of the bridge with Lego characters.

Provide Conclusion:–Plenary – Come together to test the bridges by placing them all in the centre of the classroom. Ask all the chn to look at each group's efforts, predicting if it will be strong enough for the car. Then test each bridge. If the bridge holds the Lego characters (or Lego characters) ask the chn to suggest what it is about the design and paper choice that is making the bridge strong. If it doesn't hold a Lego characters, talk about how the design could be improved next time.

Show the chn this clip of the Strongest Paper Bridge Competition – World's Strongest Paper Bridge Competition – from www.Youtube.com

Independent writing opportunities –A toy firm wants to know what the best design for a paper bridge is. Write up how you carried out your investigation and what you recommend.

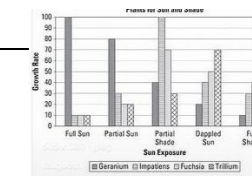


NC Working Scientifically (UKS1) = During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

Statutory requirements:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

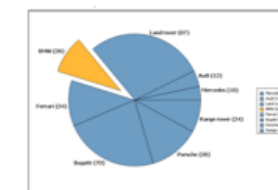
I can analyse data and pose a question. TAF 1/2



Present results to children from previous investigations/investigations related to the topic of materials.

Waterproof coat
Suitable rabbit hutch
Changing shape
Strength of paper

Children to analyse the data and pose a question that each set of data could answer. Chn to work in mixed pairs to analyse key features of the data: – type of chart, titles and headings, scale etc.



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