

MINI ARCHERY: ADD ANOTHER STRING TO YOUR BOW

Links to:

Key Stage 2 History National Curriculum and Upper Key Stage 2 Science National Curriculum ('Forces')

WHAT YOU'LL NEED:

- Lolly sticks (soaked in water for 1 hour)
- Cotton buds
- Dental floss
- Hole punch
- Targets (anything you like)
- Desk fan
- Curved or spherical object (tennis ball or mug etc)
- Scissors

In this activity, pupils consider the role of the bow and arrow in the lives of ancient Britons. They then build miniature bows in order to explore the relationship between forces that act on the bow and the arrow in flight including energy transfer, gravity and air resistance. By the end of this activity pupils will have:

- Discussed the importance of the bow and arrow in Stone Age and Bronze Age life.
- Created working (miniature) bows and arrows, and revised their designs and technique based on performance.
- Examined the effects of air resistance and gravity on the arrow to determine how a better result can be achieved.

ACTIVITY:

INTRODUCE...

What? Bows and arrows in ancient Britain.

How? The group should discover that the bow and arrow was a vital tool for hunting and a lethal weapon in times of war. Use video, re-enactment or if possible artefacts as the basis for class discussion or pose key questions which pupils can answer using evidence from resources you provide. The activity notes on page three may help you with this element.

DEMONSTRATE...

What? A bow and arrow in action.

How? Pupils will construct their own bows and arrows. This can be completed in a number of ways: modelling the different stages of the process to the class, giving pupils the instruction sheets provided, or giving them a completed bow and the necessary tools to enable them to discover the process independently.

EXPLAIN...

What? How far an arrow can fly and why it can't fly further.

How? Hold a competition to determine how far an arrow will fly from a mini bow. Use this as the basis for small group discussion about why the arrow cannot fly further. The class should identify three key constraints – the power of the bow, the effect of gravity pulling the arrow to the ground, and the effect of air resistance slowing the arrow as it flies. You may need to provide prompts depending on what you have already covered.

APPLY...

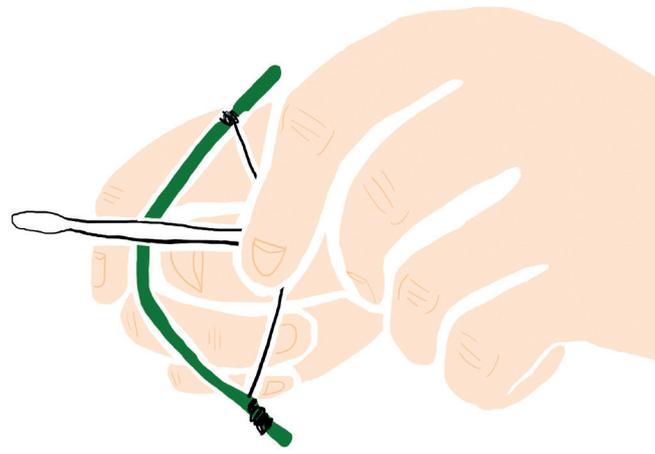
What? Explore the effects of air resistance and gravity on the flight of the arrow and its accuracy.

How? Ask pupils to conduct a series of experiments to determine how these two forces affect the arrow. The desk fan can be used to alter the air resistance or to introduce side winds, which will impact the arrow's flight. Controlled experiments will show that an arrow dropped vertically and one fired horizontally will both hit the floor at the same time under the force of gravity irrespective of the distance travelled. This can be used to explore how the firing angle compensates for the effect of gravity.

SUMMARISE...

What? This element checks understanding of the activity and consolidates the key learning points.

How? Hold a final competition to hit a specific target from a firing line, using the desk fan to create wind effect. This activity mimics ancient Britons using bows and arrows to hunt for food. Before each shot, encourage pupils to explain how they will alter their technique to hit the target (eg aiming left to compensate for the wind, or aiming higher because the target is further away.)



ACTIVITY NOTES

HISTORICAL CONTEXT

Archaeological evidence shows that archery has truly prehistoric roots, with the earliest known arrow fragments discovered in caves in South Africa dating from circa 64,000BC. The earliest discovered bows in Northern Europe date to circa 8,000BC.

Most major civilisations, including the Egyptians, Mayans, Greeks and Romans used bows as both a hunting tool and a weapon of war. Archers were considered skilled soldiers and specialised regiments in the Roman Army were known as 'Sagittarii'. Archers were also the attributed cause of well documented historical events such as the death of King Harold at the battle of Hastings in 1066, and the defeat of the French armies at the Battle of Agincourt in 1415.

The bow and arrow was used throughout the Stone, Bronze, Iron and Middle Ages until its eventual decline from the 15th century onwards due to the widespread adoption of firearms.

Hunting with a bow was an everyday skill for ancient Britons prior to the introduction of widespread livestock farming in the Iron Age. To this day however, bows and arrows are commonly used as a hunting tool in various societies across the globe.

The Key Stage 2 History National Curriculum provides several opportunities to study archery as both a tool for hunting and means of warfare:

- As a tool in the lives of people in a particular time period such as the Stone, Bronze or Iron Ages; or in Roman, Anglo-Saxon or Viking civilisations.
- As a theme in British history that extends pupils' chronological knowledge beyond 1066. Examine how hunting changed, how the bow itself developed, or its role as a weapon in the development of warfare.
- As an aspect of life in the earliest civilisations, such as the Shang Dynasty archers.

MAKING MINI BOWS AND ARROWS STEP-BY-STEP

1. PREPARE THE LOLLY STICKS

Soak the lolly sticks in water for one hour so that they become soft and flexible.

2. PUNCH HOLES IN THE STICKS

Use a hole punch to make four holes in each corner – the spacing should be perfect for each side of your bow.

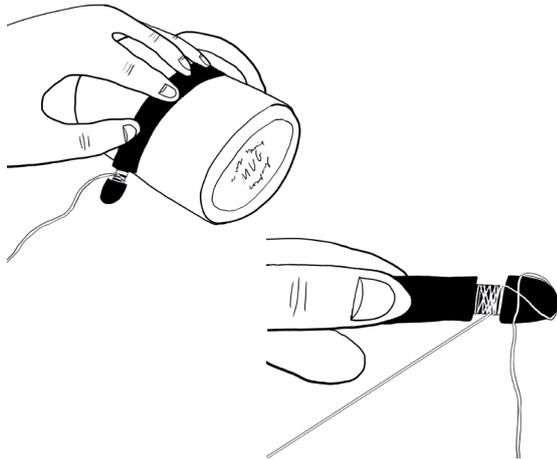
3. STRING YOUR BOW

Wrap dental floss around one end of the bow so that the wraps hold the loose end securely.



4. FORM THE BOW SHAPE

Gently bend the lolly stick over a curved surface so that it takes the shape of a bow. Keeping the bow curved, carefully wrap the dental floss around the other end of the bow so that the string is tight and holds the bow shape. Tuck the loose end through your final wrap to secure the dental floss.



5. MAKE THE ARROWS

Cut one end off a cotton bud, then add a 'nock' at the end of the shaft by making a small notch in the cut end.