Vikings – Science Ideas Web

Age range: 5–7 years

VIKINGS

BIOLOGY

Grouping living things

Vikings traded furs from different mammals like reindeer, wolves and foxes for silk. Silk comes from silkworms, which are insects.

? Can we make a table showing what mammals and insects look like? ? What other types of animal can you think of (eg spiders)? ? Can you put these other animals into groups of similar animals? ? Can you say why you have put them together?

Habitats and environment

Vikings traded furs from reindeer, wolves and foxes to people in the Mediterranean for silk and other goods. Animals like reindeer live in the far north and the Arctic.

? Can we find out what the environment is like in the Arctic compared to the Mediterranean? ? Why do you think animals in the Arctic have thicker, softer fur than animals in the Mediterranean? ? Can you think of any other differences between animals in the Arctic and the Mediterranean?

Nutrition – eating the right foods

Vikings ate different things throughout the year because plants grow at different times of the year. For example, many fruits are only available in autumn, but leafy plants can also be eaten in spring and summer.

? Can we make a table showing which fresh foods are available in each season? ? Can we make a healthy menu for a summer feast?

CHEMISTRY

Changes in materials

Viking blacksmiths made things out of iron. Iron starts off as a rock that is melted using fire. Then, the iron is beaten with a hammer to make things, for example a horseshoe, a knife or an axe.

? We can use a hammer to change the shape of some hard materials. Other materials don't change their shape, they just shatter. Can we make a table of different materials to show the effect of hitting them with a hammer? ? Can you think of other ways to change the shape of a material apart from hitting it with a hammer?

Identifying and grouping everyday materials

Vikings used different materials to make things, eg longships from wood, money from silver, cups from cow horn, weapons and armour from iron, fabrics and clothes from wool and linen.

? Can we find any more materials that were used in Viking times and that are still used to make things today? ? Are those materials used for the same or different things today?

Distinguishing between an object and its material

Vikings knew what the best materials were for making different things: boats were made of wood because wood floats; swords were made of iron because it is hard and can be sharpened; clothes were made of wool because it is warm.

? Can we make a table of everyday items used in Viking times and find out what they were made of? ? Can we compare the materials used to make things in Viking times with what those things are made of today?

PHYSICS

Sounds and their sources

Vikings used horns from cows to signal warnings such as 'Dinner's ready!' or 'Enemies are attacking!'. They also made music with skin drums, bone whistles and other musical instruments.

? We can make sounds with musical instruments. What else can we use to make sounds? ? Can we make a table showing different ways to make sounds, such as banging or blowing? ? Which things make the loudest or quietest sounds?

Pushes and pulls

When Vikings travelled across the sea in their longships the wind filled the sails and pushed the boat along. If there was no wind the Vikings pulled the oars to move the ship.

? What other things can we move using pushes and pulls? ? Pushes and pulls can make things move. What other things can pushes and pulls do?

Seasonal change

In the far north of Norway, above the Arctic Circle, it is always light (daytime) in summer and always dark (night-time) in winter. In Denmark the seasons are more like Britain, with long nights in winter and long days in summer.

? What are the differences between the weather in summer and in winter in Britain? ? What do you think the winter weather is like in northern Norway? ? Vikings travelled south as far as the Mediterranean. What differences in weather do you think they would find as they travelled south?

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ROYAL SOCIETY OF CHEMISTRY

Vikings – Science Ideas Web

Age range: 7–9 years

VIKINGS

BIOLOGY

Conditions for growing plants

It is harder to grow crops in Scandinavia where Vikings come from because it is colder there. One of the reasons the Vikings came to Britain is because it is easier to grow food here.

? Can we find out where common food plants that we eat today are grown (eg lemons, plums, barley, potatoes)? ? Can we make a table showing whether plants can grow in colder places like Norway or only in hotter places like the Mediterranean? ? What other things and conditions do plants need to grow?

Exercise and healthy lifestyles

Vikings were great sailors and often rowed their longships up rivers and across the sea. They also liked sports and tests of strength like lifting heavy rocks and throwing spears.

? How does exercise affect your pulse and breathing rate? ? Why are they affected? ? What else happens to your body when we exercise? ? How would you explain what your pulse is to somebody who didn't know?

Function of the skeleton

Viking warriors trained a lot for battle. Their training involved getting used to fighting when wearing chainmail armour and other protective equipment.

? Chainmail armour is like the skeleton of some animals. Which animals have their skeleton outside their bodies? ? Not all animals have a bony skeleton. Can we find out what other types of skeleton some animals have? ? Your skeleton is also like armour but protects organs inside your body. Which parts of your skeleton protect organs in your body?

CHEMISTRY

Changes in materials

The Vikings lived in an ever changing world. In winter it was cold and the land was covered in snow and ice, in summer it was much warmer and the land was green with plants. These changes would have affected how Vikings lived their lives.

? Think of a way to measure how hard butter is. How does the hardness change as the temperature changes? ? What is the difference between drying laundry in winter and in summer?

Separating mixtures

Nowadays, a machine called combined harvester cuts corn at harvest time and separates the grain from the straw and chaff. In Viking times this had to be done by hand using a flail in a process known as threshing. The straw is made of big pieces, and the chaff and grain out of small pieces. The chaff is much lighter than the grain.

? Can we separate a mixture made of three things in a way similar to threshing? One part of the mixture is made of big pieces (like the straw), one made of small but light pieces (like the chaff) and one made of small but heavy pieces (like the grain). Once you have separated the big pieces, you need to think of a different way to separate the smaller pieces from each other.

Comparing and grouping rocks

Vikings used rocks for sharpening weapons, grinding grain into flour and as an abrasive for smoothing hard skin or rough wood.

? What do you think makes rocks good for sharpening, grinding and smoothing? ? Can we select and test different rocks, grouping them into rocks suitable for each job?

PHYSICS

Light reflection from surfaces

Vikings were very skilled at making gold, silver and bronze jewellery. These metals can be polished to make them very shiny; some can be polished enough to use them as mirrors.

? When we look into a mirror what is it we are actually seeing? ? What other materials can we find that are good for making mirrors? ? The image in a metal mirror can sometimes be wobbly, especially if the mirror has been dented. Why do you think this is?

Light and shadows

Vikings used sun shadow boards to find their way when travelling. These devices were a bit like a sundial: they used shadow to find the direction they were travelling in, but they only worked on sunny days.

? Which materials cast good shadows? ? Can we use shadows for things other than telling time or direction?

The Earth, sun and moon

Vikings travelled long distances by sea but were not scared of falling off the edge of the Earth, even though they did not know the Earth was spherical. They also thought the sun and moon were horse-drawn chariots that followed each other through the sky around the Earth.

? The Vikings thought that the lands of the Earth were surrounded by a huge sea. How much of the Earth is land and sea? ? Were the Vikings correct? ? We now know that the Earth, sun and moon are different sizes. Can we make scale models of the Earth, sun and moon?

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ROYAL SOCIETY OF CHEMISTRY

Vikings – Science Ideas Web

Age range: 9–11 years

VIKINGS

BIOLOGY

Beneficial effects of microorganisms

Vikings used microorganisms to make different kinds of foods such as skyr (a type of yoghurt), beer and mead (a drink made from fermented honey and water).

? Can we find out which modern foods and drinks are made using microorganisms? ? Are the microorganisms that are used to make food different from microorganisms that spoil food?

Life cycles of animals and plants

Vikings grew different types of cereal and vegetables for food. Vikings raised many animals, like pigs, sheep, goats, horses, geese and chickens. They also hunted and fished for food.

? Can you describe the life cycles of farmed plants and animals? ? Can you describe the differences between the life cycles of mammals (eg pigs and sheep) and birds (eg chickens)? ? What is the life cycle of a fish? ? Do any other animals have similar life cycles?

Evolution and fossils

People in Viking times believed that some stones and fossils had healing powers. They often used fossil ammonites or belemnites, squid-like creatures from the Cretaceous period, as charms for protection.

? Can we find out how fossils are formed? ? Can we make an imprint of a shell and use it to cast a fossil out of plaster? ? What can we find out about the changes that have occurred in animal life since the Jurassic and Cretaceous times?

CHEMISTRY

Changes of state

Scandinavian winters were so cold that rivers and lakes would freeze over. Even if the land was frozen, sometimes Vikings could still travel short distances by sea if the weather was fine.

? Find out why sea water doesn't freeze at the same temperature as fresh water. How does adding different amounts of salt to water change the temperature at which it freezes? ? How do you think this could be useful when keeping streets free of ice in winter? ? What other substances change state when heated or cooled?

Irreversible changes

Vikings used chemistry in a variety of ways from baking bread to burning down Saxon villages. These are examples of irreversible changes: once the bread is baked you can't get the flour back; you will need to rebuild a burnt-down village from scratch.

? What other examples of irreversible changes can you find at home and at school? ? Vikings made glue out of milk. Can we find out how they did it and see how well it sticks things?

Reversible and irreversible changes

In Viking times babies wore nappies with peat moss to keep them dry. Modern nappies contain crystals made of superabsorbent polymers.

? What nappy brand is best at absorbing water? ? Can you think of any reasons for differences between brands? ? What other materials can absorb water? Which is the best? ? Once the polymer crystals in a nappy have absorbed the water, is there a way to get the water back?

PHYSICS

Sound: pitch and volume

Viking musicians had a variety of percussion, stringed and blown instruments they could play. The Viking lyre was a stringed instrument similar to a guitar but much quieter.

? Can we find out what makes a guitar louder than a lyre? ? How does covering and uncovering the holes in a recorder change the pitch? Why? ? How can we change the pitch and volume of a drum?

Balanced forces

Vikings loved to play games of strength and skill, for example lifting heavy objects or tug of war.

? When both teams in a game of tug of war are pulling with the same strength they stay still: we say the forces are balanced. What happens when the forces become unbalanced? ? Can you describe, using balanced and unbalanced forces, how a Viking lifts a heavy log and holds it still over his head?

Contact forces

Viking longships were long and narrow and didn't sink far into the water. They were the fastest ships of that time. If Vikings rowed up a river but got to a stretch that was too shallow or narrow for rowing, they would take their ship out of the water and pull it across the land until they got to a suitable part for rowing again.

? Can we make a model to investigate boat shapes and find out which shapes float best in water? ? Can we investigate which surfaces are best for pulling objects across? ? How does the weight of an object affect how easy or hard it is to pull it across a surface? ? What forces are acting in these situations?

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