World War II – Science Ideas Web

Age range: 5–7 years

WORLD WAR II

BIOLOGY

Basic structure of a plant and functions of parts of a plant

Lots of Britain's food arrives by ship from abroad. During the war, enemy submarines sank so many ships that there was a shortage of some foods. People were encouraged to grow their own fruit and vegetables.

? Can we make a list of plants we can eat?
? Can we make a table to show plants where we eat the stems, the roots, the flowers, the fruits, the seeds or the leaves?

Basic needs of animals and humans

People made air raid shelters from iron sheets to protect themselves from falling bombs. The shelters were half buried in the garden with earth on top. The shelters were dark, damp and crowded, but people often had to spend many hours inside.

? Can we make a list of things we should take into a shelter to keep us healthy and comfortable? ? What if we could only have three things? What would we need to take with us?

Nutrition – eating the right foods

During the war, it was difficult to import foods such as tea, sugar, jam and meat from other countries. These foods were rationed. Everybody was allowed only a small weekly amount of each of these foods.

? What would be good about a diet that was rationed? ? What would be not so good?
? Can we plan a healthy meal with no tea, sugar, jam or meat?

CHEMISTRY

Distinguishing between an object and its material

Soldiers needed uniforms and parachutes, so there wasn't much material to make everyday clothes. People were encouraged to 'make do and mend'. Old bicycle tyres were used to repair the bottom of shoes. Old parachutes were cut and sewn into underwear. String was used to hold up socks, pants and trousers.

? Can we find materials in class that we could use to make something to wear? ? Why would these materials be suitable? ? Which materials would not be suitable for making clothes? Why not?

Identifying and grouping everyday materials

Lots of toys had a war theme: there were toy planes, toy tanks and toy battleships to float in the bath. Materials such as plastic, wood and metal were used to make equipment for the war; so many toys were made out of paper or cardboard.

? Can we sort our classroom toys into different groups, based on what they are made from? ? Which material is used the most? ? Can we find out which material is the strongest and which is the weakest?

Changes in materials

During the war, most homes had a fire to warm the room where families gathered to relax. Candles were used to light shelters.

? Can we make a list of materials we can burn? ? Can we describe what happens to materials when we burn them?

PHYSICS

Light Sources

During the Blitz, many people built air raid shelters called Anderson shelters in their gardens. The shelters were made of strong sheets of iron covering a hole dug in the earth. These shelters were dark and damp. Candles were used to light them.

? What light sources can you identify?
? Which is the brightest? ? How could we test this?

Seasonal change

The second world war lasted for six years. Soldiers had to fight in battlefields all over the world, with only temporary shelters to protect them when they rested.

? Which season do you think soldiers would have preferred and why? ? Which season would have been difficult to get through?
? Can we make a weather chart to show how the weather changes during each season?
? Are seasons the same everywhere?

Sounds and their sources

Cities were bombed as enemy planes tried to destroy factories. The government moved children out of the cities to protect them from air raids. This was known as evacuation. About 800,000 children left their homes. Many returned after a few weeks, while others stayed in the countryside for the rest of the war.

? Can we make a table to compare the sounds that we hear in a city and sounds that we hear in the countryside? ? Which place do you think will have the loudest sounds?

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ROYAL SOCIETY OF CHEMISTRY

World War II – Science Ideas Web

Age range: 7–9 years

WORLD WAR II

BIOLOGY

Conditions for growing plants

Before the war, Britain imported a lot of its food, such as bacon, tea, sugar and fruit, from other countries. During the war, ships carrying food to Britain were sunk by enemy submarines. People were encouraged to 'dig for victory', turning their gardens into allotments to grow their own vegetables.

? Which vegetables can we grow in the school grounds? ? Where would be the best place to grow them? Let's have a class competition to grow the best vegetables!

Nutrition – eating the right foods

Food rationing began in 1940. This meant each person could buy only a fixed amount of certain foods, such as meat, cheese, sugar, tea and rice, each week.

? What can we find out how rations differed for adults and children, and why? ? What can we find out about how rations were different for people doing different jobs, and why? ? Can we plan a victory celebration using the usual rations (plus any fruit and vegetables grown in our victory garden)?

Exercise and healthy lifestyles

Schools believed that the frequent dashes to the air raid shelters provided enough exercise for children during the war. PE lessons were basic and involved exercising children in lines in the playground.

? Why is it especially important for children to exercise? ? How do different activities affect our pulse rate and breathing? ? Which activities affect our pulse rate and breathing the most?

CHEMISTRY

Soil for growing plants

Wartime gardeners were encouraged to create compost heaps in their gardens, with slogans such as 'Your garden feeds you. You must feed your garden'. Compost made from organic matter – the remains of plants and animals – improves the soil.

? Can we find out how soil changes when we add compost? What tests could we do? ? What happens if we add different amounts of compost and soil together? ? How can we investigate if compost makes a difference to how plants grow?

Uses and properties of materials

Metal, glass and rubber were needed for the war effort so alternative materials had to be found for everyday uses. Food was covered with plastic wrap instead of aluminium foil; toys were made from paper or cardboard; glass milk bottles were replaced by cardboard containers; plywood replaced metals for the hulls of boats and aircraft wings.

? Can we make a table to show which are the best materials for food wraps, toys, milk containers and boats? ? Why are these materials the best?

Uses and properties of materials

During the Blitz, bombs were dropped on cities in Britain. People made Anderson shelters by bolting together curved iron sheets to protect themselves from the blasts. These shelters were half-buried in the garden and the top was covered by a thick layer of sandbags and soil.

? Why do you think iron was used for the shelters? ? What else is iron used for? ? Can we find other materials that have the same properties as iron?

PHYSICS

Light and shadows

During the war, everyone had to cover their windows and doors at night to prevent light from escaping. If light escaped then enemy aircraft were able to see towns and cities during their bombing raids.

? Which materials would be good for making blackout curtains for windows? ? How could we test them? ? Which material is the best?

Electric circuits

Samuel Morse developed the first version of the Morse code. This translated pulses of electricity into readable messages. During the second world war, secret messages were sent between troops using Morse code.

? Can we create a circuit with a switch to turn a buzzer or light on and off quickly? ? Can we send a secret message using Morse code?

Sound: pitch and volume

Air raid sirens were used in cities to warn of enemy air attacks. When people heard the sirens they would stop what they were doing and run for a shelter. The sirens were very loud and had a cone-shaped horn.

? Does a cone-shape make sounds louder? Let's make some cones from cardboard and investigate. ? Can we find other ways to make sounds louder?

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ROYAL SOCIETY OF CHEMISTRY

World War II – Science Ideas Web

Age range: 9–11 years

WORLD WAR II

BIOLOGY

Environments and adaptation

During the war, a lot of food was imported. It came in on ships from other countries and was vulnerable to attack from the German navy.

? What can we find out about which fruit and vegetables we import by looking at food packaging? ? Can these fruits and vegetables be grown in Britain? ? Where are they grown?

Harmful effects of microorganisms

Eggs were an important source of protein for people during the war. However, eggs were difficult to transport and had a short shelf life before they became unfit for humans to eat. The solution was to dry out the egg contents to make powdered egg. This was easier to transport and lasted much longer.

? What makes eggs unfit for humans to eat? ? Can we make a table to show different ways of preserving food and which methods are best?

Harmful effects of microorganisms

In 1928, Alexander Fleming discovered penicillin. Penicillin was used on a large scale for the first time during the second world war. It helped reduce the number of amputations and deaths by preventing infections.

? What can we find out about how microorganisms get into our bodies and how our bodies try to prevent this? ? Can we make a table to show what things we can use to kill microorganisms and which are the most effective?

CHEMISTRY

Reversible and irreversible changes

The London Blitz began on 07 September 1940. Over eight months, bombs dropped by German aircraft destroyed approximately one third of London. Many of the bombs dropped were incendiary bombs, which were designed to start fires.

? What materials are used to make a house? ? Can we put them in a table to show which materials will burn and which won't burn? ? Can we design a fireproof house? ? What materials would it be made from? ? Why do you think houses aren't made of fireproof materials?

Separating mixtures

During the war, everyone was supplied with a gas mask in case poisonous gas bombs were dropped during air raids. Gas masks were designed to filter out harmful gases from the air.

? Can we make a model or a poster to show how filters can separate mixtures of substances? ? Why do you think some people wear simple face masks when they are decorating their houses?

Uses and properties of materials

Soldiers in the war were supplied with clothes, boots, weapons and a personal kit that they carried with them in a kit bag. The following items were made from different metals: bayonet, shovel, mess tin, mug, water bottle, cutlery, thimble, grenades and helmet.

? Can we make a table to show which metal was used and why it was suitable for the items in a soldier's kit bag? ? What materials do you think would be used in a modern kit bag?

PHYSICS

The Earth and the moon

On 06 June 1944, allied soldiers invaded beaches along the coast of the Normandy. Troops did not want to use artificial light so that the enemy would see. They used the light reflected from the moon to guide their way.

? Which phase of the moon would be best for landing, and why? ? How much light does the moon reflect compared to the light from a torch or from the sun? ? How could we measure this?

Forces: buoyancy

Submarines were widely used during the war. They could sail on the surface or underwater, so they could attack almost anywhere and anytime. They had special ballast tanks that could be filled with water so they sank, or filled with air so they rose to the surface.

? How can we show that air helps objects to float? ? What examples can we find where air helps an object to float in water?

Light reflection from surfaces

Most bombing raids during the Blitz occurred at night. Large searchlights were used to illuminate enemy bombers approaching in the sky. Mirrors were used inside the searchlights to increase the amount of light directed into the sky.

? What surfaces can we find that reflect light well? ? How can we find out which surface reflects the most light? ? Can we find a way to measure what difference a reflector makes in a torch?

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ROYAL SOCIETY OF CHEMISTRY