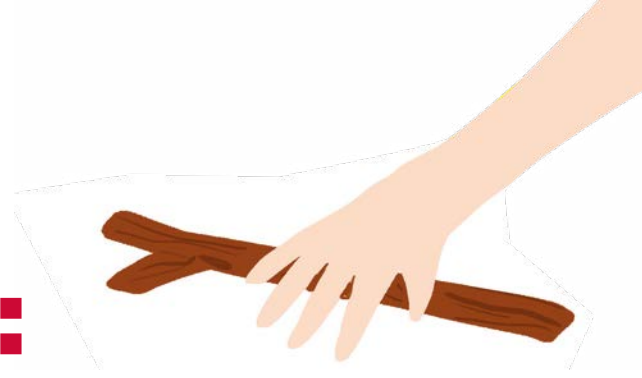


Making sparks: Light a fire



Curriculum links: Key Stage 2 English, year 6: Writing - Composition, spoken language

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Learning Outcomes:

In this activity pupils will learn how to use a fire steel to make a small fire and toast a marshmallow.

They will develop their spoken language, asking relevant questions, participating in discussions and building on the contributions of others. Finally they will plan and complete a written piece, using appropriate organisational and presentational devices to structure their work, and selecting a style and range of vocabulary appropriate to the purpose of the writing.

- Have participated in group work, responding and listening to instructions, forming knowledge and understanding collaboratively.
- Reflected on their experiences to produce a well-structured written piece, using specialist vocabulary and appropriate content to the intended audience.

What you'll need:

- firesteels (these can be bought for around £5 each if buying several)
- cotton wool (as tinder)
- marshmallows
- lots of thin sticks (as kindling)
- bottle of water (for safety)

Activity:

Introduce...

What? Fire is a tool that, if used carefully, can help us to perform lots of tasks – like cooking marshmallows.

How? This works well as a discussion or mind mapping exercise. Ask the class what they already know about fire. Is it a good thing or a bad thing? What uses does it have? (eg cooking, light, heating houses, bonfire night etc). If we wanted to use fire for cooking, what sort of rules would help ensure that we stayed safe? Use pupils' ideas and suggestions to produce a set of rules, which you can adopt for the following activity.



Demonstrate...

What? How a firesteel can be used to light a fire.

How? In a suitable location, demonstrate how the firesteel is used to light a piece of cotton wool. This demonstration should be visual, with no explanation at this stage. Use deliberate, careful movements to show exactly how to make sparks.

Explain...

What? How you used the firesteel and how to add kindling to the burning tinder to make a small fire.

How? Repeat your demonstration but this time, explain each step as you go. Your explanations must be clear as they will help the class to create their own fire lighting instruction sheets later.

Highlight the principle of the fire triangle, as well as the practical importance of fluffing up the tinder and finding matchstick-sized sticks for kindling. Explain that it is vital to keep a bottle of water close to hand to put out the fire. Add a small handful of kindling to the burning tinder to make a small fire. While the flames catch, emphasise that the kindling should not be moved or added to. Let the fire burn itself out.

Apply...

What? Ask the class to practise lighting small bundles of kindling.

How? Prepare a safe area for small groups to light their fires. Start by attempting to light single pieces of cotton wool from a kneeling position. Pupils should be facing towards you, spread apart in a horseshoe. The other members of the groups should stand slightly behind the pupil lighting the fire, offering verbal help and advice. Give everyone the chance to light some cotton wool. You should be satisfied that everyone can do this safely before moving on to fire lighting.

Next, ask groups to gather a small bundle of matchstick-sized kindling. Using the same technique as previously, let each group light their cotton wool tinder before adding their small bundle of kindling to make a small fire. Select one of the fires (or use your demonstration fire) and add slightly more fuel so that it will continue to burn for 5 to 10 minutes. Once the groups have extinguished their small fires, ask them to gather round your fire. Explain how to toast marshmallows on long sticks, holding them above – not directly in – the flames. Give pupils the opportunity to find suitable sticks and toast marshmallows. When you are done, make sure your fire is completely extinguished.

Summarise...

What? Ask the class to create a set of instructions for toasting marshmallows.

How? Ask the groups to create mind maps of the lesson. They could split this into linked stages – eg safety rules, preparing the tinder, collecting the kindling, using the firesteel, lighting the fire, toasting the marshmallow and extinguishing the fire.

Using the mind maps as a guide, pupils should now create a set of instructions for toasting a marshmallow – from the first stage to the last, including clearing the fire site. One member of each group could write up a different stage, so that the group produces one set of instructions between them. Ask pupils to review all the drafts of their stages before making a final version of the instructions.

Activity notes

A firesteel consists of a steel striker and a ferrocerium rod, which is made from a metal alloy. When they are struck together, shavings from the rod produce sparks, which can be used to light a bundle of fluffy tinder and create fire. Striking two materials together to make fire is known as fire by percussion.

Tinder is fuel that lights from a spark. It should be dry and fluffy, with a large surface area to allow oxygen close to the fuel.

Kindling is fuel that will light from a small flame. When collecting kindling, look for thin, dry twigs about the thickness of matchsticks. If you're building a bigger fire, collect bundles of kindling of increasing thickness, with each bundle about twice as thick as the previous one.

The fire triangle

To light a fire three essential components must be present: oxygen, fuel and heat. These form the fire triangle. If any one side is removed then the triangle collapses and the fire goes out.

Safety

Pupils should only light a fire when:

- They have adult supervision.
- They have the permission of the landowner.
- They have their parents' permission.

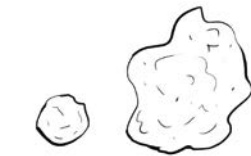
When the fire is lit:

- Do not add or remove fuel unless you have permission.
- Behave sensibly and don't run around.
- Make sure a fire is completely extinguished before leaving it.

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Using a firesteel step-by-step



1. Prepare the tinder

Tinder is fuel that lights from a spark. Cotton wool makes good tinder as it lights easily, but it should be teased out into a big ball before use – this increases its surface area and allows oxygen close to the fuel. Place the tinder on a hard, safe surface – eg dry earth. Ensure that you have an open bottle of water to hand.



2. Position the firesteel

Hold the firesteel so that the rod is between your thumb and finger, pointing in line with your thumb. Hold the steel striker between your thumb and finger in your stronger hand. Place the edge of the striker on the rod at a 45° angle, close to the top of the rod.



3. Make some sparks

Push the striker down the rod, scraping off the top layer of metal. This produces a white hot shower of sparks.



4. Ignite the tinder

Scrape all the way down the rod until the striker comes off the end, pushing the sparks towards the tinder and igniting it.

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Lighting a small fire from cotton wool step-by-step



1. Collect some twigs

Collect a bundle of matchstick-thick twigs approximately 30cm long.



2. Build your fire

Place a larger piece of wood on the ground and position the kindling over the top, with the tinder placed underneath. This protects the tinder. Ensure that your bottle of water is close to hand.



3. Light the tinder

Light the tinder and let the flames light the kindling. Do not move the kindling – wait for it to catch. The fire will initially produce thicker smoke and steam as the kindling dries out, then the flames will spread throughout the bundle.



4. Fuel the fire

Add further bundles of kindling to sustain the fire but don't let it become too big.



5. Toast your marshmallows

Use long green sticks to toast marshmallows. Hold the marshmallows above the flames, not directly in them.



6. Make the fire safe

Allow the fire to burn out completely before leaving the area – use water to extinguish if necessary. Clear the site so that there is no trace you've made a fire.