

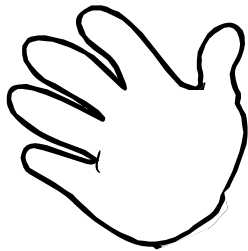
Believe It or Not: Invisible Ink

After Easter Thomas found it hard to believe Jesus was alive until he saw for himself. Children can use invisible ink to explore the idea that even though something may not be visible it can still be there.

The following week, Jesus spoke to his friends over a meal at Emmaus and then disappeared. Use the second experiment to explore the idea that something can be there and then not there...

Doubting Thomas Message:

Give children the outline of a hand to write on. They could just make the marks of the nails on Jesus' hands, or write a message to Thomas from Jesus. They can then swap hands and apply heat to reveal the hidden message.



Invisible Ink 1

Invisible Ink works as a result of the chemical reaction between low pH (acidic) and high pH (alkaline) substances, or when heat is applied.

Substances to write with:

Acidic:

- onion juice
- lemon juice
- lime juice
- white vinegar

Suitable 'pens':

- thin paint brush
- cotton bud
- tooth pick or wooden skewer
- feather (quill)

Anything too sharp will scratch the paper and leave visible clues that betray the presence of a message. Use a plain hard-surface white paper, not shiny (the fluid will leave a visible trail), not too thin (the fluid will make the paper wrinkle).

Apply heat when dry to reveal the message: cover writing with a piece of plain or greaseproof paper (not waxed) and iron over it.

Heat alternatives:

- Bake in moderate oven for 3-5 minutes
- Hold over a warm light globe

Alkaline:

- Bicarb soda water (50/50):

Brush or spray lightly with **purple grape juice** to reveal the message.

Try also:

- salt water
- sugar and water
- milk thinned slightly with water
- water in which eggshells have been soaked for a few days

See if these respond to heat or to the purple grape juice.

Be very tricky:

- Write a message on the paper in ordinary ink.
- Write the invisible message in between the lines of the visible message.
- Apply heat and reveal what they didn't know was there!

Invisible Ink 2

There is a pigment called flavin found in apple skin, grapes and red cabbage (amongst other things), which is a natural pH indicator. Use it to create pictures that disappear!

Magic Water Recipe

- Boil ¼ of a red cabbage in 2½ cups of water. (for a larger quantity, boil ½ red cabbage in 5 cups water.)
- Pour through a sieve to remove the cabbage.
- Spray or paint the juice over your invisible writing.
- Try doing this with apple skin (if green apples don't work, try red apples).

Emmaus Sunday: There and not there!

- Put a little of the cabbage/apple water in a glass jar and note the colour.
- Now add some white vinegar: notice the colour change.
- Next add some bi-carb soda: see the colour change back again.
- How many times can you do it before the colour is completely neutralised (disappears altogether)?

Emmaus Picture:

- Draw a picture of Jesus at the meal table, on a piece of white paper using the cabbage juice.
- Spray or brush lightly with vinegar and see what happens.
- Try it again, this time brushing with bicarb water. What happens?
- What happens if you try spraying the pictures again with the opposite solution?

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