

Equipment

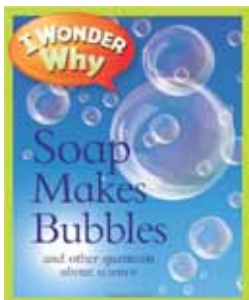
RESOURCES

- Marbling inks (www.hope-education.co.uk)
- Epsom salt (Boots Pharmacy)
- *Science in the Early Years* by Pat Brunton and Linda Thornton
- *The Little Book of Explorations and The Little Book of Investigations* by Sally Featherstone
- *Developing Early Science Skills Outdoors* by Marianne Sargent



CHILDREN'S BOOKS

I Wonder Why Soap Makes Bubbles and Other Questions About Science
by Barbara Taylor
One of a great series of info books that ask the types of questions young children wonder at.

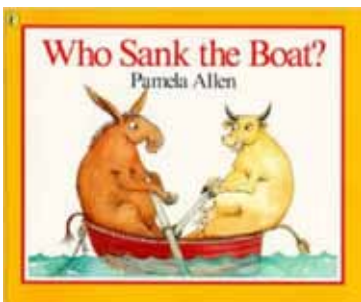


Icky Sticky Monster
by Jo Lodge
Pop-up book featuring all the horrible sticky substances produced by a monster.



Duck in the Truck
by Jez Alborough

Duck's truck gets stuck in the muck and his friends try to help him out.



Who Sank the Boat?
by Pamela Allen
Can the children guess which animal is

responsible for making the boat sink?

Let's explore... science

Children at a Bright Horizons setting turned into willing little scientists, explains *Marianne Sargent*

Children at Bright Horizons Crewe Nursery and Preschool became young scientists when they took part in an investigation exploring the behaviours of different materials.

Nursery manager Stephanie Beesley explains the investigation was planned as part of the Growing Scientists initiative, one of four programmes of learning created by Bright Horizons and disseminated to nurseries within the group.

The Growing programmes cover the core National Curriculum areas of maths, science and English and aim to provide children over the age of three with experiences that will stand them in good stead once they start school.

The investigation was carried out with the children from the pre-school room and aimed to introduce the scientific concept of properties. Miss Beesley explains that the idea came from the children themselves after 'they had enjoyed another volcano experiment we had done with mints in Coca-Cola earlier in the year'.

OBJECTS AND MATERIALS

Nursery staff spent time looking through information books with the children and introduced them to a

range of objects and materials. This led to a week of investigations involving floating and sinking, during which the children were encouraged to observe different materials in water.

'We did the traditional floating and sinking in water, but we also made sensory bottles with things floating in them and put them around the room,' says Miss Beesley. 'We filled and half-filled them with water and added cooking oil, food colouring, little pompoms, glitter, water beads – you name it, we added it.'

'The children shook them and watched the objects moving up and down. We had regular small group time when we'd talk about how the different things moved in the liquids. The team has had training in sustaining shared thinking, which really helped to encourage the children to prolong their conversation with the adults. They used lots of different language like 'it's heavy' and 'it's going to sink', and they came out with questions such as 'Does ice float?'. Every child was really engaged and so was the team.'

The staff then went away to reflect on their observation notes and the children's comments and questions, and researched a science investigation that they felt would appeal to the children's fascinations and interests.



Access to sensory bottles filled with various materials spurred curiosity

They came up with an experiment involving placing small plastic balls in a selection of substances to see how different consistencies of liquid affected the freedom of movement of the balls. Staff poured water, food colouring, oil, treacle and syrup into shallow dishes and jars and added different numbers of balls to each. The children were then invited to rattle and tilt the dishes and jars and observe how the balls moved.



The children observed how balls behaved in shallow jars containing stuff such as oil and syrup

Miss Beesley adds that the nursery is keen to work closely with parents and has a home links display where staff leave information sheets, activities and challenges that can be picked up and taken home. For this particular project, staff put together takeaway boxes containing bottles, small objects and suggestions for substances that parents could add at home.

‘The children absolutely loved these experiments, they were so engaged, so connected to what was happening,’ says Miss Beesley. ‘The project was both educational and fun and the children really enjoyed themselves. As with all the activities we choose, it encouraged the children to learn through imagination, creativity and play.’

LEARNING OPPORTUNITIES

Staff’s observation notes included:

- **PSED:** Is confident to speak in a familiar group, will talk about ideas and choose the resources needed for chosen activities.
- **CL:** Listens and responds to ideas expressed by others in conversation or discussion.
- **PD:** Handles tools and equipment effectively.
- **L:** Knows that information can be got from books and computers.
- **M:** Uses everyday language to talk about shape, size, weight, capacity and position.
- **UW:** Can talk about some of the things they have observed; looks closely at similarities, differences, patterns and change.
- **EAD:** Experiments to create different textures. ■

Marianne Sargent is a writer specialising in early years education and a former foundation stage teacher and primary and early years lecturer.

‘The children absolutely loved these experiments, they were so engaged’

Fluid thinking

Here are more ideas for extending children’s early science learning.

instead and explain how they work to the children.

Upscale the investigation

- Have some messy fun outside by setting up an activity for the children to test how fast objects move through different substances.
- Make ramps from plastic trays on wooden blocks or crates, or guttering on hurdle stands.
- Pour different substances such as treacle, syrup, oil, water and shaving foam onto the ramps and slopes.
- Provide a range of small balls made from different materials such as plastic, foam, wood and rubber for the children to roll down the slides through the different substances.
- Encourage the children to describe what happens to the balls. Introduce vocabulary such as ‘stuck’, ‘slip’, ‘slide’, ‘sticky’, ‘tacky’, ‘slippery’, ‘slow’, ‘drag’ and ‘fast’.
- Ask the children questions such as, ‘Do rubber balls get stuck more easily in treacle?’
- Extend the investigation by introducing cube-shaped objects to see if the shape makes any difference; for example, will a ball roll through treacle easier than a cube will slide?
- Extend it further by introducing heavy and light objects to see which moves easiest through different substances.

Disappearing act

- Experiment with mixing different substances into liquids to find out which dissolve and disappear.
- Fill some jars with warm water and provide a selection of substances to add such as Epsom salt, sugar, sand and flour.
- Invite each child to choose a substance. Ask them what they think will happen to it when it is mixed into the water.
- Give each child a jar and ask them to add a teaspoon of their chosen substance to the warm water, screw the lid on tight and give it a good shake (bearing in mind that it may take some time for the salt and sugar to dissolve).
- Observe what happens to the different substances. Which disappear and which do not? What do the children think has happened to the substances that have disappeared?
- Introduce the word ‘dissolve’ and explain that the salt and sugar have not actually disappeared but are still in the water – and you can prove it by making them reappear.
- Pour some of the sugar and salt solutions into shallow dishes and leave them on a sunny window sill. Observe them over the coming days as the water evaporates to leave salt and sugar crystals behind.

Puddle marbling

- Investigate what happens when you mix different liquids together by marbling in puddles.
- Experiment with mixing oil and water indoors before going outside. Pour water and oil into jars, seal them and shake them, then observe the liquids separating as they settle.
- Go outside after a heavy rainfall and find some large puddles.
- Add drops of vegetable oil and food colouring to the puddles and stir with twigs.
- Gently lay sheets of white paper on top of the puddles and lift them to reveal a marbled pattern.
- If the patterns are not clear enough, use marbling inks

More ideas

- Do some bubble printing.
- Put some wellies on, wade through deep puddles and get your feet stuck in some mud.
- Create a tornado in a jar (www.metoffice.gov.uk/learning/weather-for-kids/experiments/tornado).
- Make heavy objects such as eggs float in water by adding salt.
- Freeze objects in ice and provide substances such as salt, sugar and vinegar for the children to experiment with in order to make it melt faster.
- Mix liquids and substances to see what happens; for example, treacle and water, and food colouring and oil.