A NICE CUP OF TEA

or a stimulus for curiosity?

Rachel Linfield and **Debbie Nabb** highlight how the humble teabag can provoke great curiosity and investigation

Starter task

Before reading this article, sketch a teabag that you have seen or used. Do this from memory – do not find one to copy. (If you want to know why, be curious and read on!)

A useful definition of 'curiosity' is '*an eager wish to know or learn about something*' (https://dictionary.cambridge.org/dictionary/english/curiosity). This definition presents an important idea when one relates 'curiosity' to a child's education in science, namely the concept of being 'eager'. Curiosity is not about passive receiving of knowledge. Being curious involves action, a desire to know, discover or learn. If being curious is synonymous with 'being eager to learn' it is paramount that all science educators encourage curiosity.

Children's curiosity should be a central part of their science education. Sometimes the curiosity will enable children to discover new things. At other times, the curiosity may stem from a desire to prove a point (or perhaps show why an adult is incorrect!). Whatever the reason for the curiosity, that curiosity, on the part of both the children and the educators, is undoubtedly key to quality teaching and learning in science.

Often in science, curiosity can stem from an everyday occurrence that encourages an observation and promotes a '*what if?*' or '*why?*' reaction. The questions may not have immediate solutions but the desire to know more can lead to many opportunities for scientific investigation initiated by children's interest. This article describes how an activity with teabags, created initially to encourage good observation skills, ended up promoting curiosity in primary-aged children.

Teabags for refining observation skills

Have you ever been asked to describe an incident or person only to be surprised later that what you thought you had observed was incorrect? The same is true for many children who, when asked to make observations in science, often 'observe' what they think they should rather than the reality. The ice cube they thought 'sat' on the surface of the water was actually partly submerged. The eyes they coloured brown were really blue. The spider they drew with six legs, had eight.

Regardless of the age and ability of a child, good observation skills cannot be assumed. Learning to make accurate observations is an important aspect of scientific investigation.

Key words: Curiosity Observation Investigation

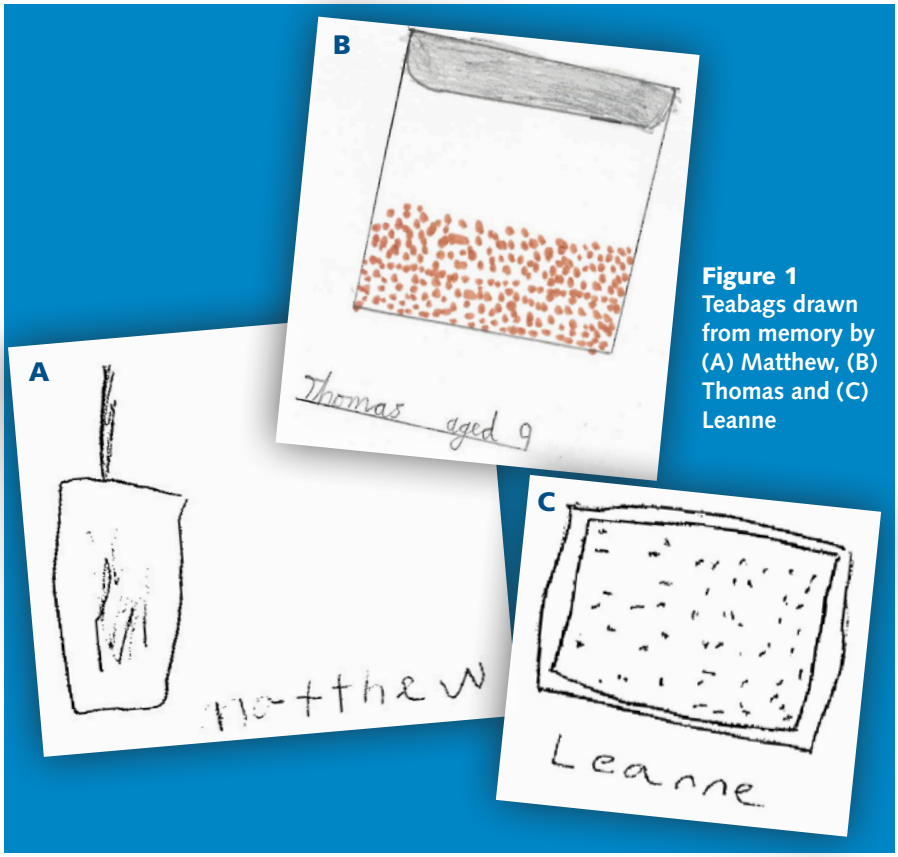

Figure 1 Teabags drawn from memory by (A) Matthew, (B) Thomas and (C) Leanne

Teabags, a readily available resource, can be invaluable in supporting the development of observation skills. Rather than simply asking children to observe a particular teabag, first encourage them to draw what they expect a teabag to look like (Figure 1). This promotes curiosity when later they notice differences between their sketches and the reality.

Matthew, aged 5 years, knows what is meant by tea and has seen his parents use teabags. His sketch shows awareness of a teabag as something containing tea and a memory of a string to pull the bag out of the hot water. His tea, however, is a patch of black, not individual tealeaves or grains. Thomas, aged 9, is a regular drinker of fruit tea. His drawing shows knowledge of the size and the contents. Eager to show the teabag as one for fruit tea, he was keen to use coloured crayons and take time rather than do the requested quick pencil sketch. Leanne, aged 10 years, does not like hot drinks but has occasionally made tea. Her picture again shows some knowledge of a teabag's appearance but lacks detail for the contents. When drawing, she deliberated on how much tea to put in the bag and, also, what tea looked like. She considered depicting it by shading, dots or 'bits'. Shading was rejected because, in her words, '*Tea is little bits. It is not a chunk like butter.*' Her eventual decision was based on the time it would take to 'draw the tea' – hence the quick dots!

All the children, when asked to compare what they had drawn with an actual teabag, showed heightened awareness of how the bags were made, the material, the amount of space, the dust and leaves, and the uneven seams joining the teabag edges. This appeared to be irrespective of their age, prior knowledge of teabags, the time taken to do the sketch or individual drawing ability. Each was eager to know if their teabag was 'right'. This desire to have a sketch that represented the actual teabag produced by the teacher then led to interest and curiosity as differences were noted. Numerous observations were made as children compared their sketches with the teacher's teabag:

- **This one is round; mine was a square.**
- **The tea is black and powdery – oh, there's also bits.**
- **The tea moves around.**
- **There's a lot of space in the bag. I thought it would be fuller.**
- **The bag is rough on one side.**
- **The edge feels sandy, like bits are coming out.**
- **The lines round the edge go in one direction (I didn't draw lines on mine).**
- **The tea looks like little sticks.**
- **The bag stuff is a bit like paper, but it isn't paper.**
- **The bag is hairy. I didn't draw hairs – actually, I didn't really do the bag. My one is see-through!**
- **I thought the bag would have holes in it. It hasn't.**

These observations led to questions (Box 1) and, in turn, the observations and questions led on to research and child-initiated experimentation.

Research and investigation

Over a week, children were invited to contribute a teabag, initially to a tabletop display of six different bags (Figure 2), and later to an entire noticeboard covered with different types of teabag. Children were only allowed to add their teabag to the collection if it was different from all the others already on the display. Note: the two rectangular bags in Figure 2, which appear similar, contain different types of tea!

The display was a focus for sorting activities based on different criteria as children became aware that identifying their teabag as different from all the others was easier if the bags were arranged in categories. It was also the focus for a '*Find the teabag that …*' activity, encouraging accurate observation and use of descriptive words. The challenge was to provide the fewest criteria to identify the chosen teabag.

Investigations then followed, with some children preferring to work alone and others in pairs or groups. Each investigation was stimulated by the

Figure 2 The tabletop teabag display

Box 1 Questions arising from the children's observations

- Is a round teabag better than one with corners?
- Are pyramid bags better than flat ones?
- What are teabags made from?
- If I left the teabag in water for a long time, what would happen?
- How are teabags made?
- How many times can a teabag be used?
- Can teabags be recycled?
- What is the best make of tea?
- Is green tea really green?
- Do fruit teas taste like the fruits from which they are made?
- Can tea be made with water that is not boiling? Can cold water be used?
- Can teabags be used if they are out of date?
- Do all teabags hold the same amount of tea?
- Does the amount of tea in a bag matter?
- When I shake the bag it makes a smell. Why? Do all teabags smell?
- Does all tea sound the same? This one made a sound when I shook it.
- Who made the first teabag?

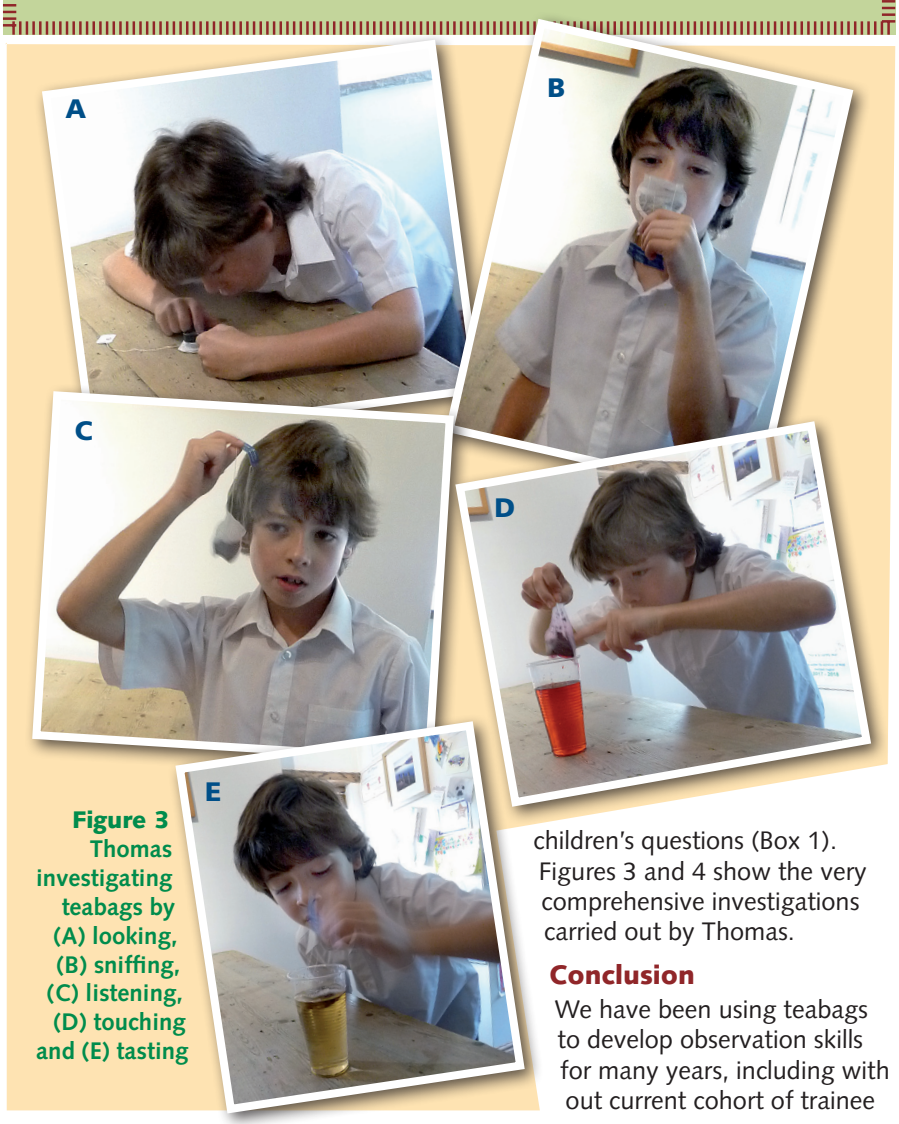

Figure 3 Thomas investigating teabags by (A) looking, (B) sniffing, (C) listening, (D) touching and (E) tasting

Figure 4 Thomas also took photographs with an iPad to examine the texture of a teabag

children's questions (Box 1). Figures 3 and 4 show the very comprehensive investigations carried out by Thomas.

Conclusion

We have been using teabags to develop observation skills for many years, including with out current cohort of trainee primary teachers! Each year a new fact emerges as curiosity leads to further questions, research and investigation. A recent fact from Rosie aged 10 arose from wondering whether teabags left in water disintegrated. A year after placing one in water she has discovered that water evaporates. The teabag is still whole but the water, when replaced, no longer becomes tea coloured. She has developed knowledge of materials and is also more aware of the processes of evaporation and diffusion.

If, as suggested, you sketched a teabag from memory before reading this article, did your drawing look like any of those in the tabletop display (Figure 2)? Are you now more curious?

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