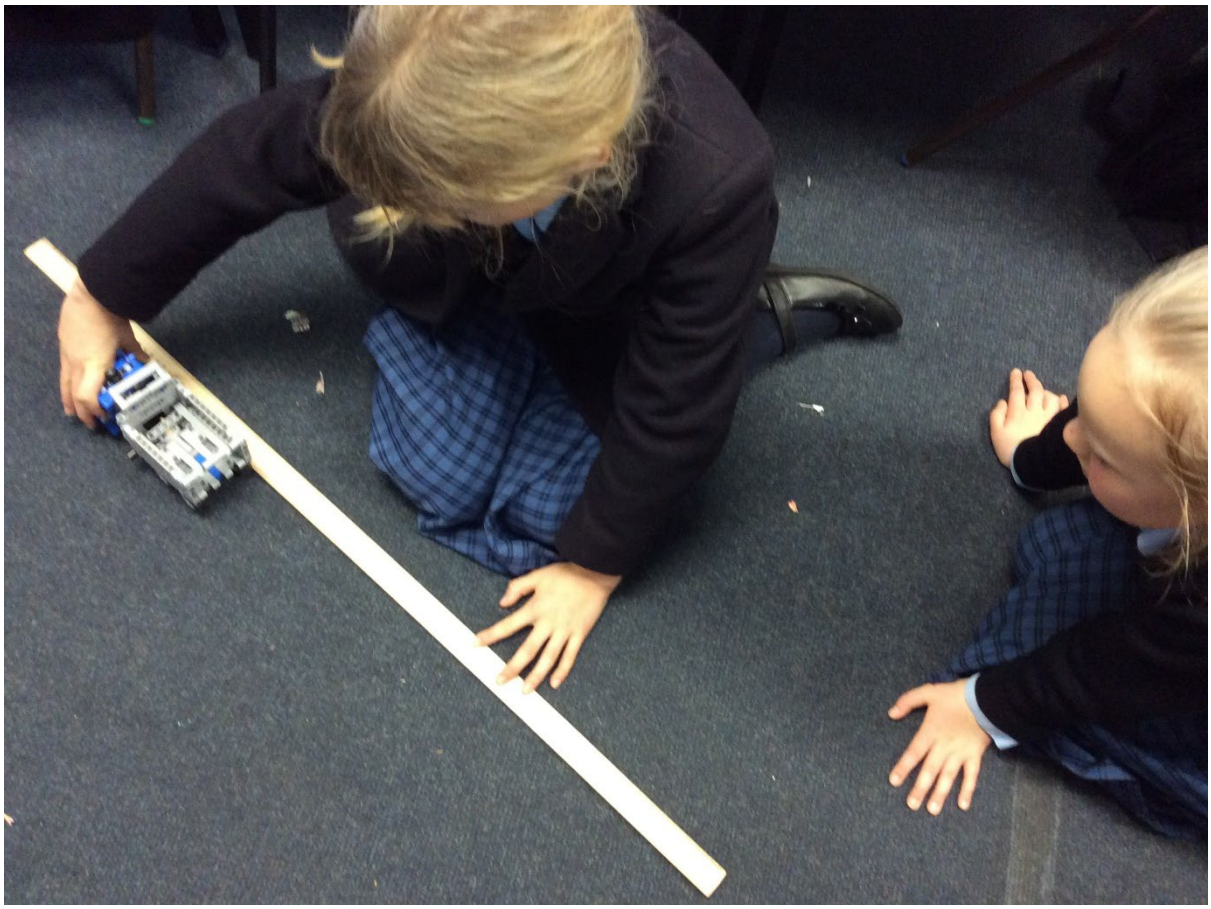
Examples of Enquiry Skills recorded in Floorbooks



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What do we mean by enquiry skills?

An important aspect of learning science is the development of an understanding of the nature, processes and methods of science:

- sharing ideas and asking questions
- planning investigations
- making and recording observations
- drawing conclusions and evaluating practical work

Sometimes these skills are referred to as **working scientifically**. Teachers should facilitate opportunities for children to develop these skills in science. Very often this is done through children's written work: children are asked to write down what they will do, record their data in tables and graphs, and to interpret their findings.

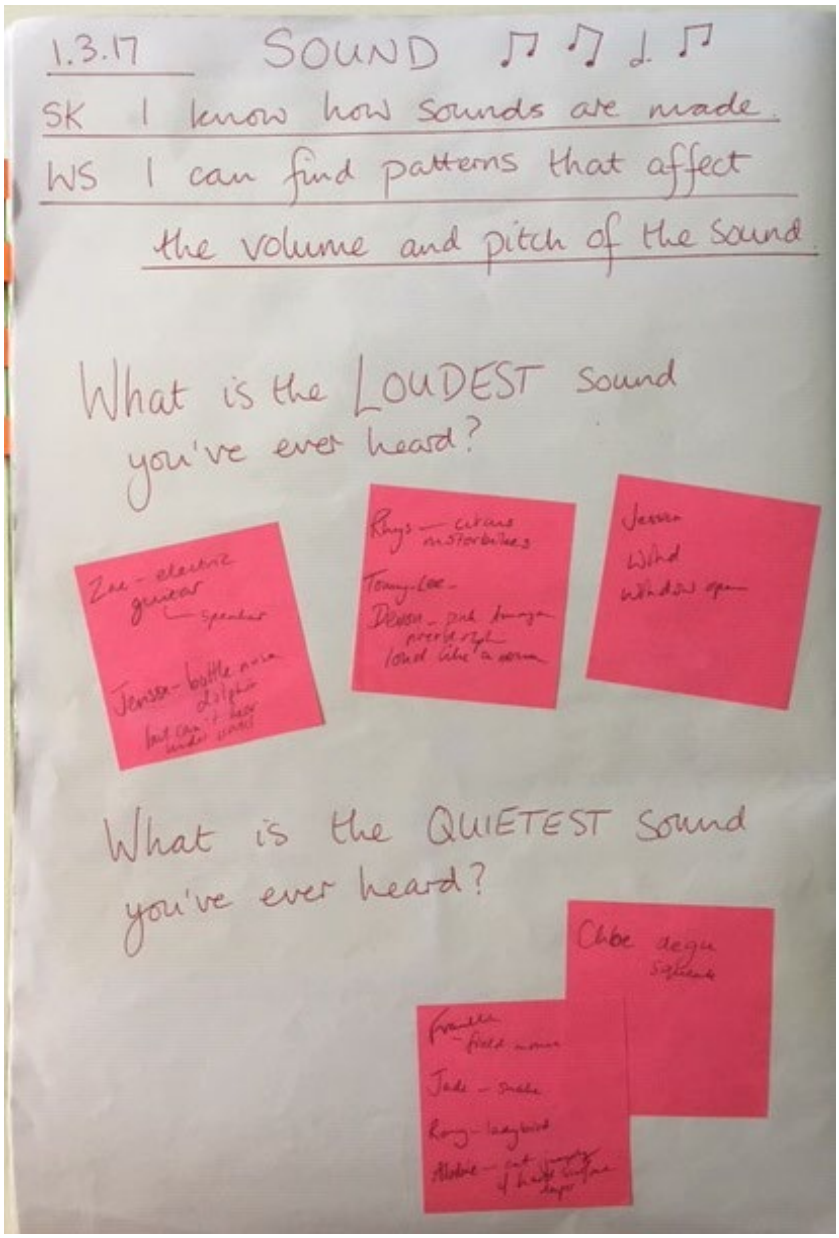
But be aware: not all children have writing skills that match their science skills.

Evidence of children's thinking and reasoning in science can be done orally and a record of children's ideas expressed orally or in written form can be kept in a floorbook. The following sections show examples of children's practical science skills recorded in floorbooks.

Sharing ideas

This teacher asked children (ages 8-9) to talk in pairs/small groups to share their ideas at the start of a topic to assess their existing knowledge.

While the children were talking, the teacher has visited some children and written their ideas on sticky notes which were stuck directly into the floorbook. Older children could write their own ideas. Targeting a few children in this way enables teachers to gain insight into children's learning which might otherwise be missed. Children were then given the opportunity to feedback to the class.

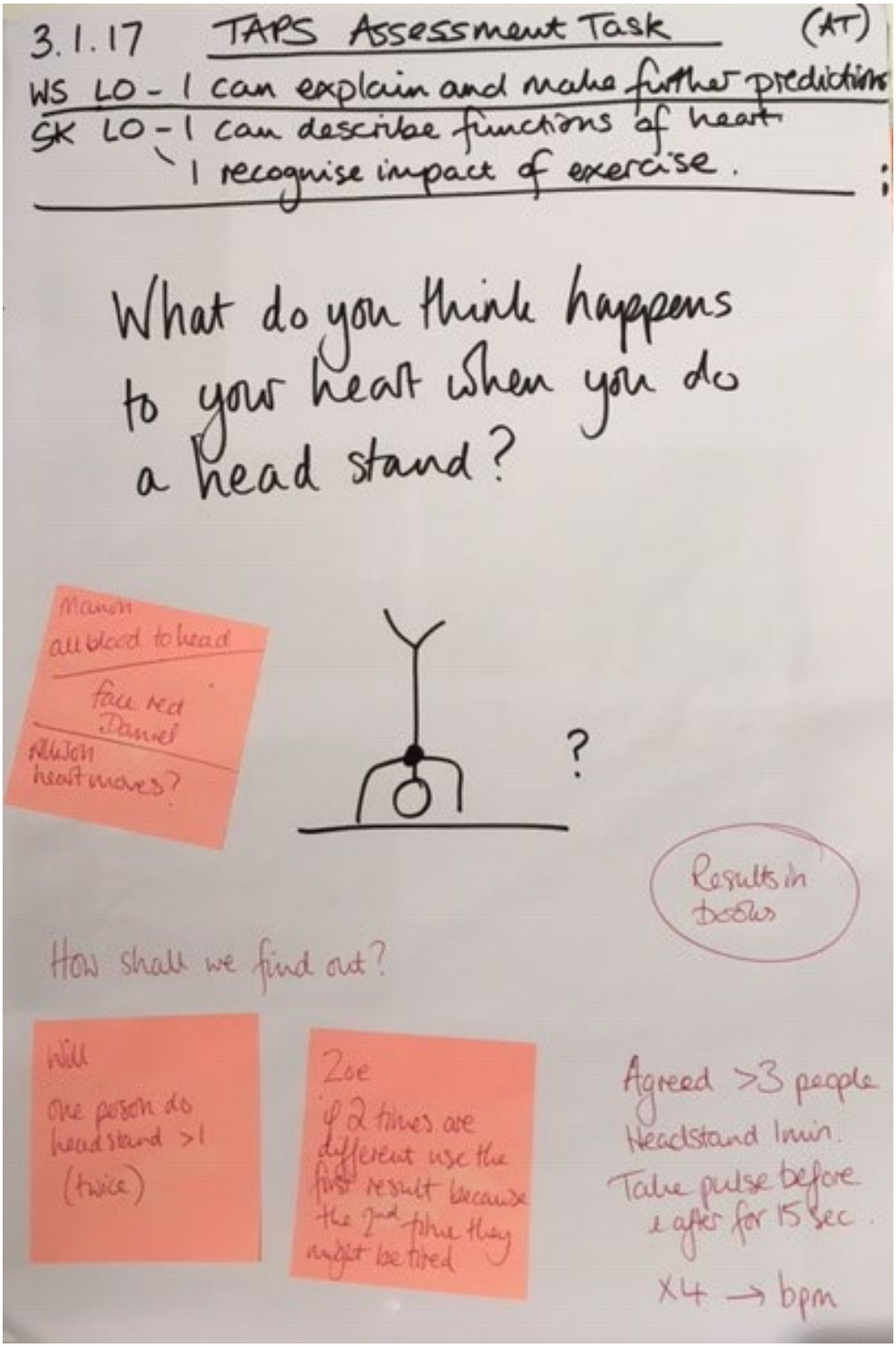


In this class, the children (ages 9-10) were learning about separating mixtures using sieves and filters. After carrying out investigations, the children were asked to think about how gas masks worked in World War II. Pupils were encouraged to write or draw a diagram on their white boards to explain their ideas. During the class discussion that followed, the teacher has photographed some of the white boards (often those of the quiet children) to create a record of their thoughts.

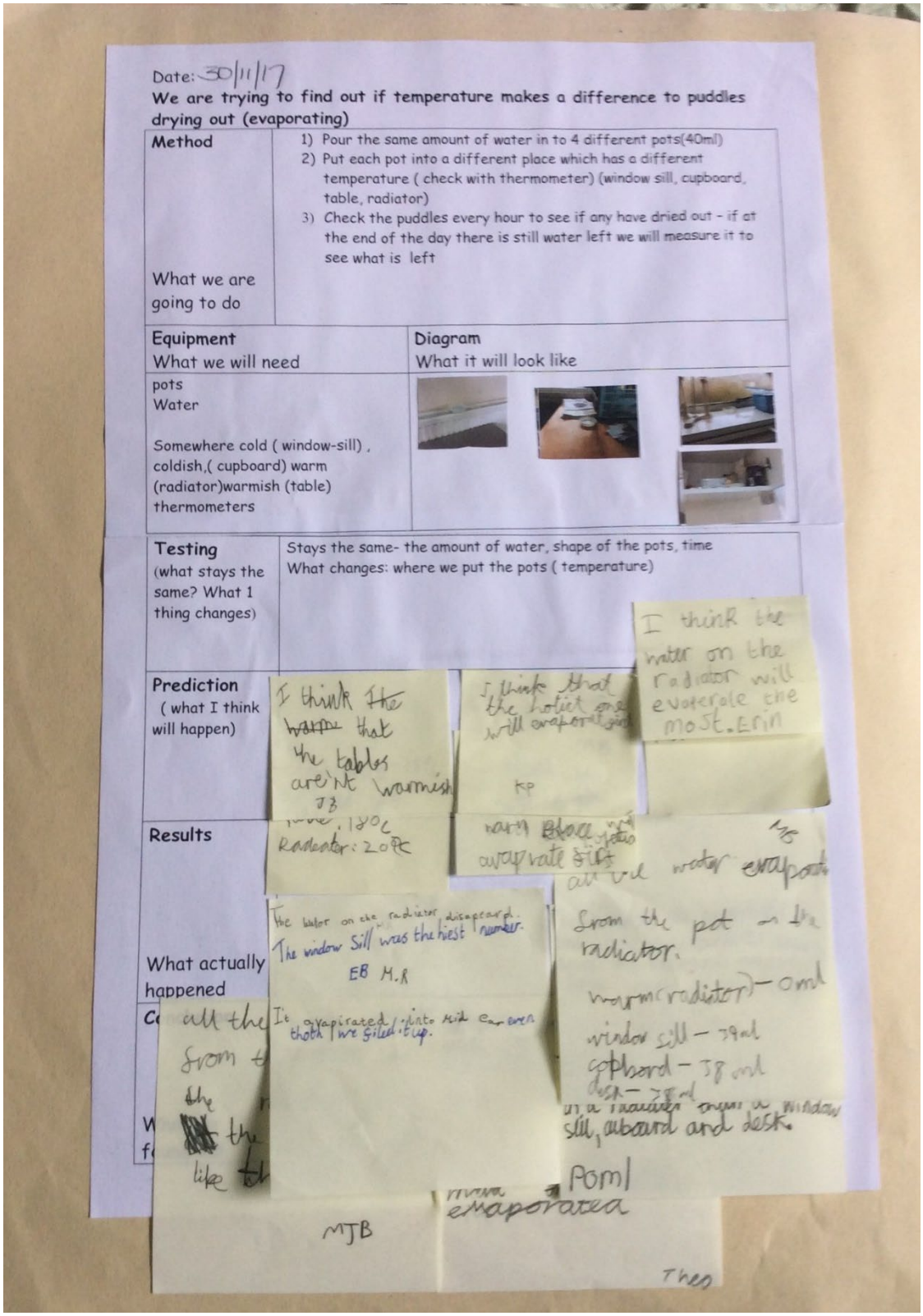
Be aware: not all children like to share their ideas in a class discussion so by scribing the comments of the "non-utterers" beforehand, the teacher has evidence of these children's ideas.

Making predictions

This teacher has used sticky notes to record some children's predictions before starting an investigation (ages 10-11).



Another teacher used a formal planning frame with the whole class to plan an investigation. Children made their predictions individually on sticky notes and these are included in the frame.



Date: 30/11/17

We are trying to find out if temperature makes a difference to puddles drying out (evaporating)

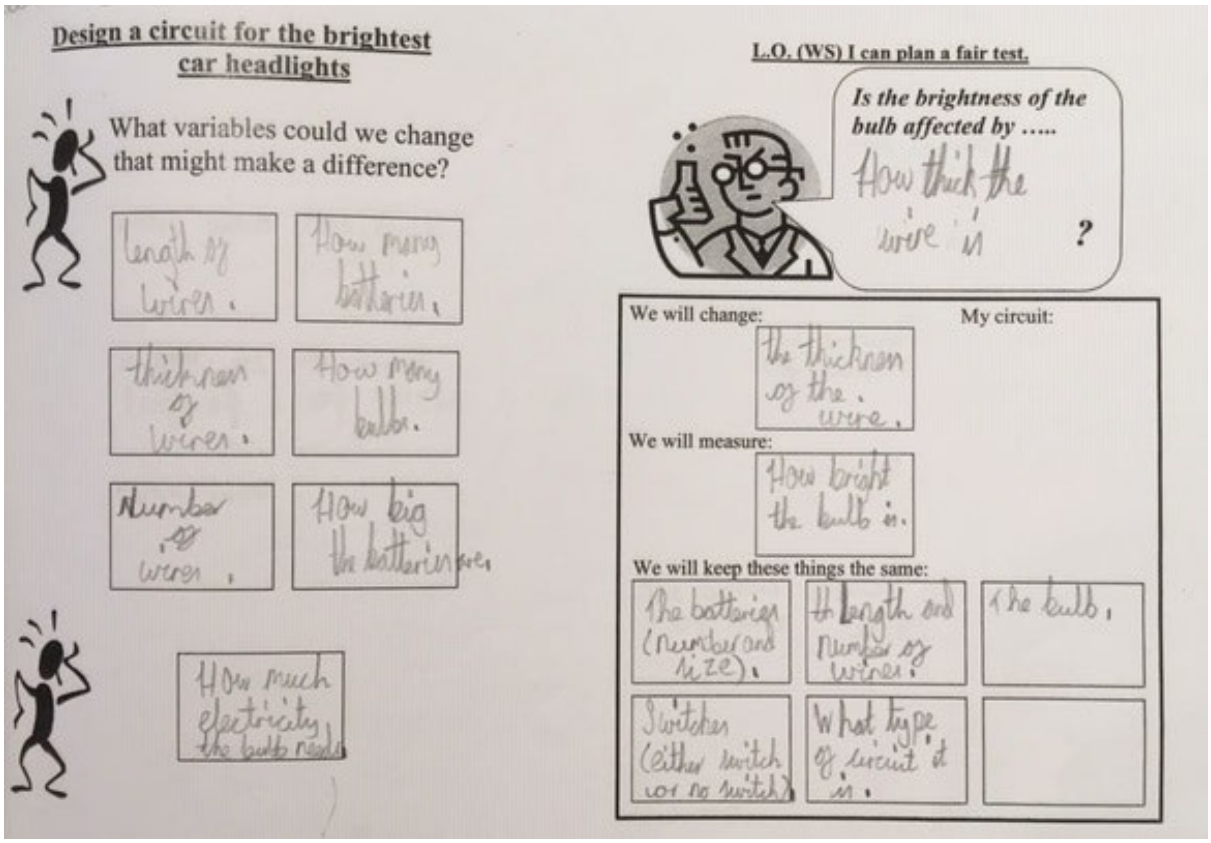
Method What we are going to do	1) Pour the same amount of water in to 4 different pots(40ml) 2) Put each pot into a different place which has a different temperature (check with thermometer) (window sill, cupboard, table, radiator) 3) Check the puddles every hour to see if any have dried out - if at the end of the day there is still water left we will measure it to see what is left

Equipment What we will need	**Diagram** What it will look like
pots Water Somewhere cold (window-sill) , coldish,(cupboard) warm (radiator)warmish (table) thermometers	

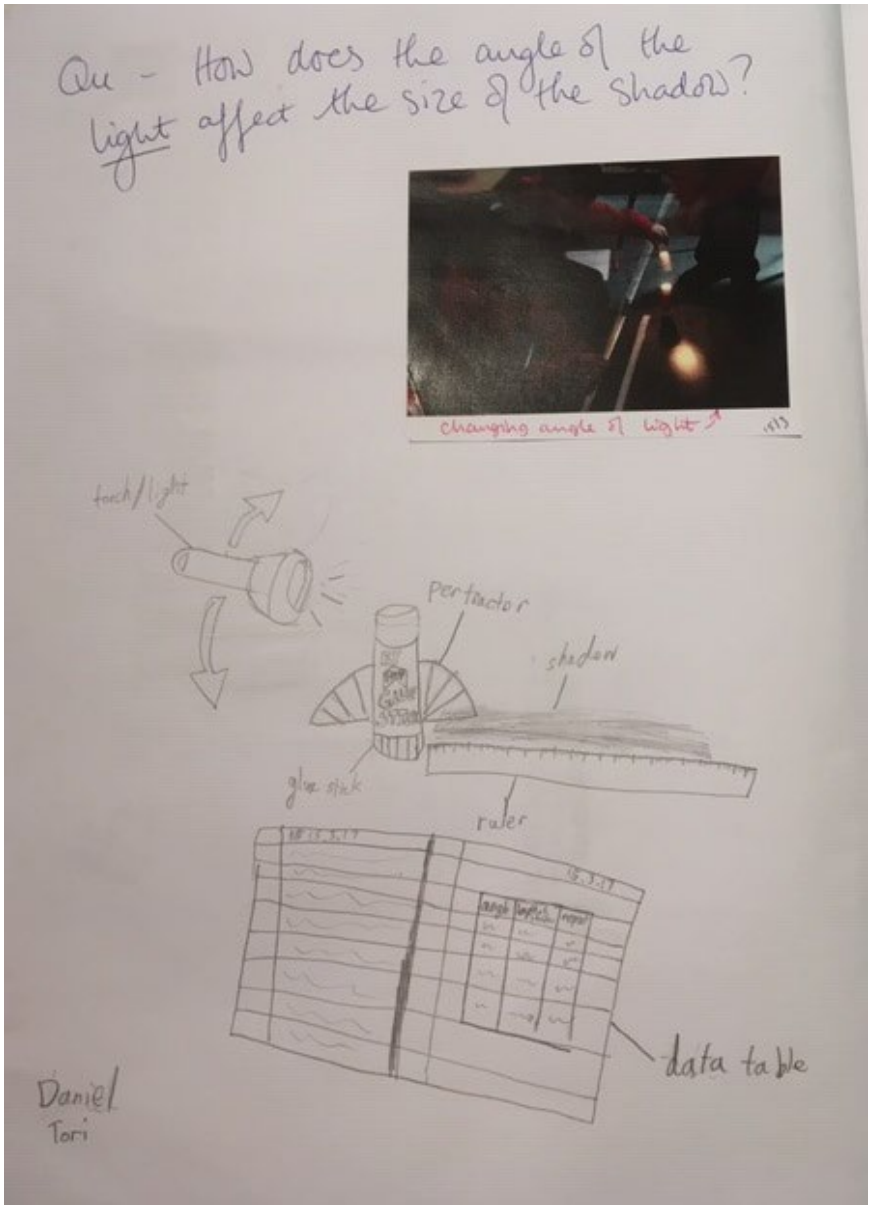
Testing (what stays the same? What 1 thing changes)	Stays the same- the amount of water, shape of the pots, time What changes: where we put the pots (temperature)
Prediction (what I think will happen)	I think the ~~water~~ that the tables are'nt warmish JB I think that the hotist one will evaporate kp I think the water on the radiator will evaporate the most. Erin
Results What actually happened	Radiator: 20°C The water on the radiator disapeard. The window Sill was the hiest number. EB M.R It evaporated into the air even though we filled it up. From the pot on the radiator. warm(radiator) – 0ml window sill – 39ml cupboard – 38 ml desk – 38ml still, cuboard and desk. all the from the like MJB evaporated Theo

Planning with and without templates

This child (age 11) has used a planning sheet to explain what his group will investigate. The teacher put two different examples in the floorbook which all the children could look at. Some children needed adult support to complete their plans – the teacher made a note of this on the lesson plan to assist with assessment but has not stuck them in the book.



This child (age 11) was asked to draw a diagram directly in the floorbook to explain their investigation. On this occasion the teacher asked a child with strong science and writing skills. On other occasions, different children have been asked.



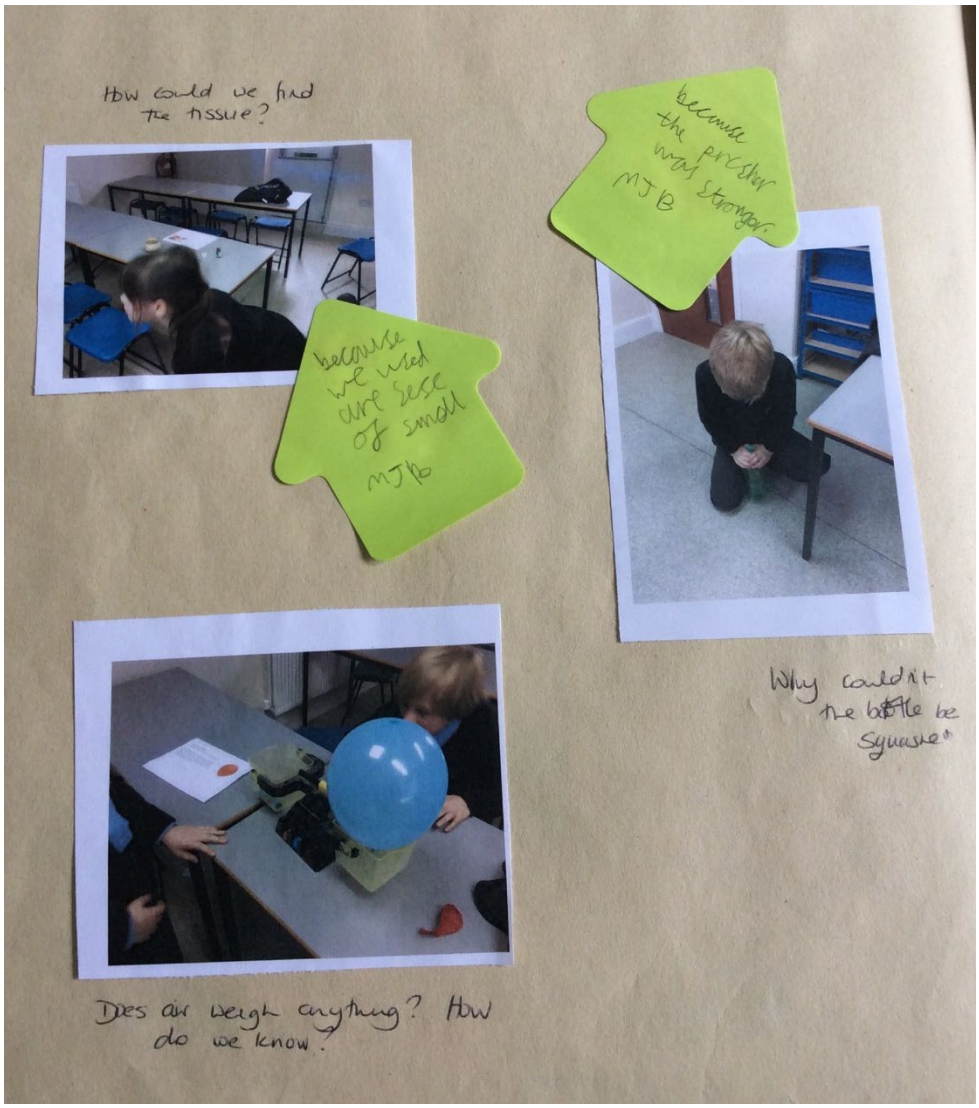
What are the advantages in allowing children to write in the floorbook?

- It avoids the need to photocopy children's work and stick in after the lesson, saving time for the teacher.
- It reinforces the message that the book is a record of the children's learning and not the teacher's knowledge.
- Children's work is valued.

Observing and measuring

These children were 'observing' the properties of gases: using their sense of smell to locate a volatile gas and investigating the volume of a gas. Photographs were taken during the investigation as the teacher visited each group. The pictures were printed immediately after the lesson and stuck into the floorbook. Captions were not necessary – actions speak louder than words!

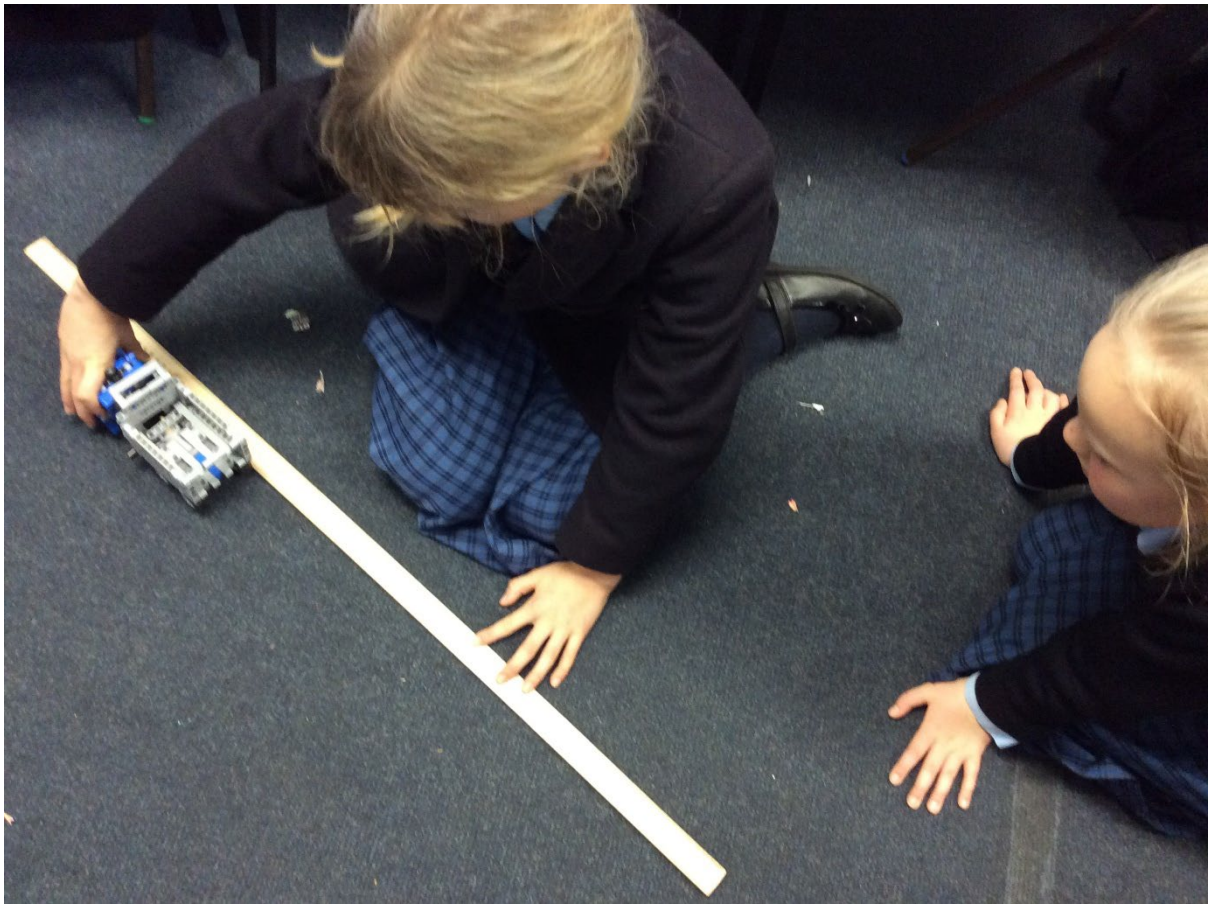
Note that the teacher has written questions next to each picture. The floorbook was available to the children between the science lessons and they were encouraged to consider the questions and add a response if they wanted to.



Using microscopes to observe mould on bread, these children (ages 10-11) were asked to 'observe closely' and record what they saw. Most of the children have drawn what they can see magnified by the microscope but there is a wide variation in the outcomes. The teacher could have asked the children to draw their diagrams in their individual exercise books but the advantage of using a floorbook here is that everyone can see the differences in the pictures raising the question, 'How closely did we observe?'

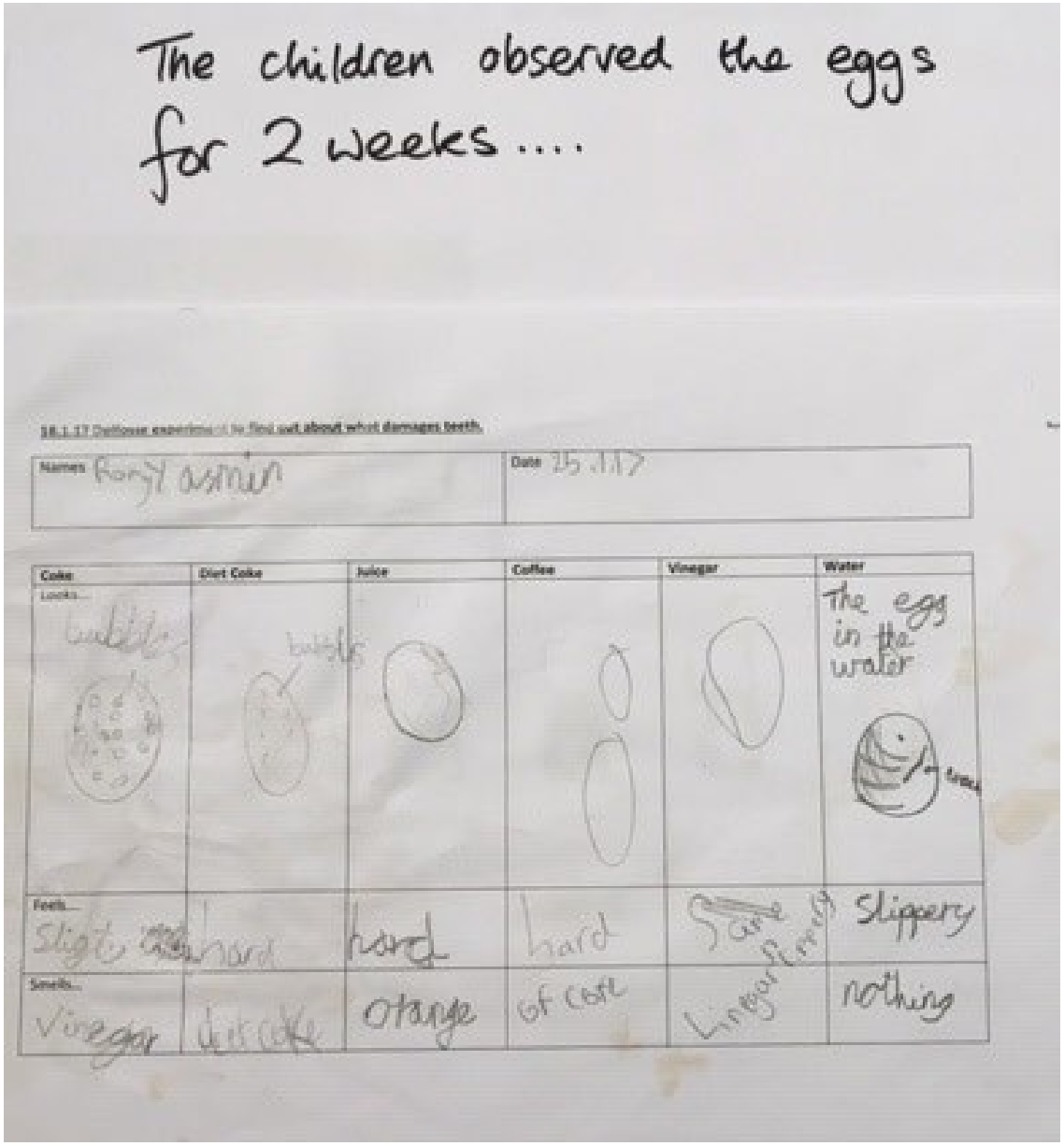
Another advantage of the floorbook approach to recording is it saves time: this was one of four activities in a carousel that the children visited within a two-hour lesson. If they had been required to present their work in exercise books, presentation becomes an issue (writing the date, a title, and underlining correctly) and fills time that could be for learning science.

These children were measuring how far toy cars had travelled in their investigation. The teacher took photographs of some children during the lesson as evidence that they could measure length accurately. No comments or further captions were needed.



Recording results

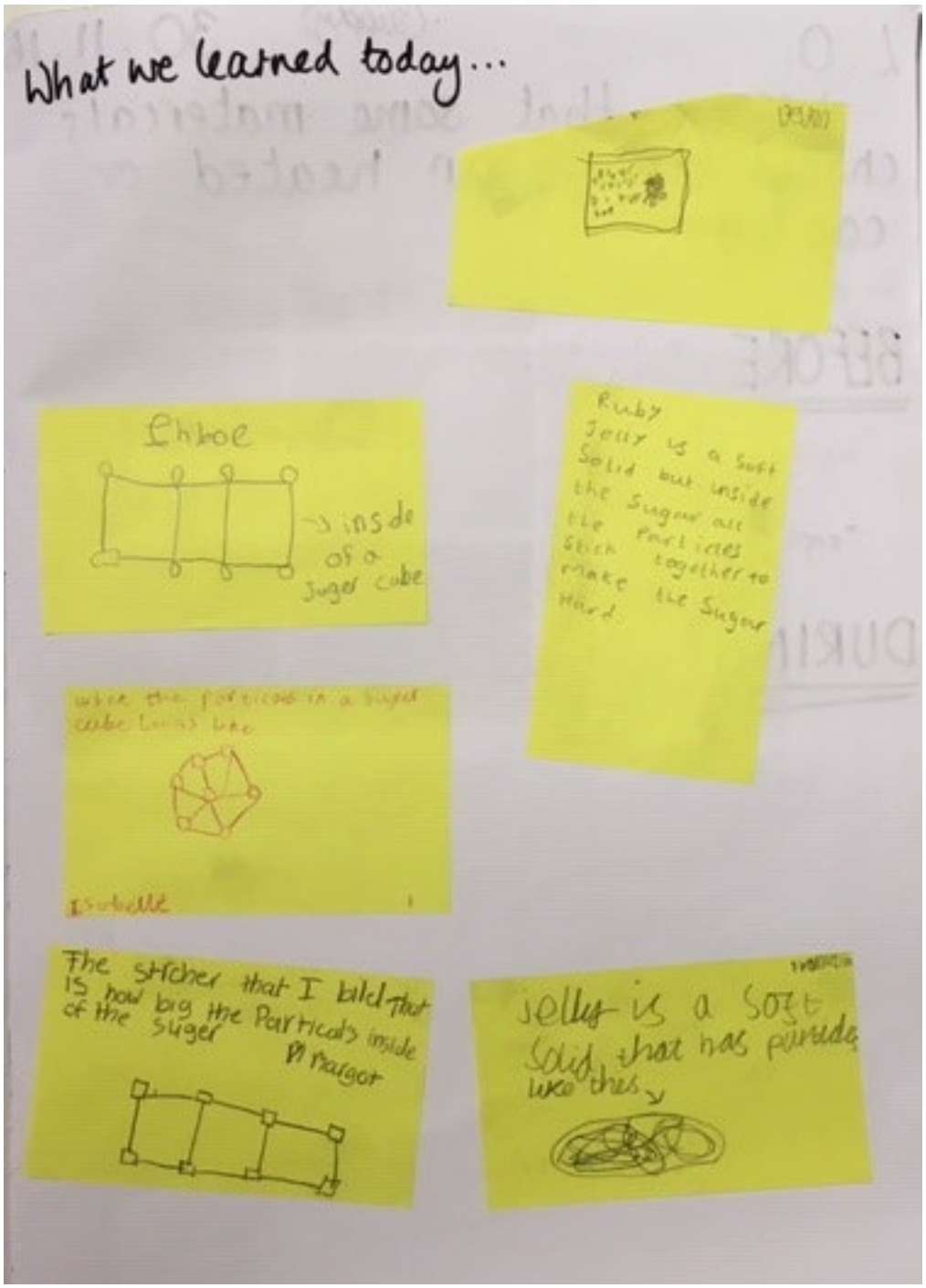
These children were working as a class, observing six eggshells over time in different liquids (classic teeth investigation). Every day, two different children recorded what they saw in a table. After 2 weeks, all the children had helped to record some data and were able to provide feedback to the class about the observations on 'their day'. The teacher made a booklet from the results which was stuck into the floorbook showing evidence that all the children can record scientifically.



It is not always necessary for children to record everything that they have done in their own books.

Drawing conclusions and evaluating investigations

There are many ways that children can show that they have drawn conclusions from their findings. After a lesson exploring different solids (sugar cubes and jelly cubes), children (ages 8-9) were asked to draw diagrams on a sticky note to show what they knew about the structure of a solid. Some children wrote in sentences, some drew diagrams. All are valid conclusions.



These children (ages 8-9) had explored lots of ways to make sounds in the classroom and then used pictures from *I Can Explain!* to talk about the sounds. Having decided which sound they thought was the loudest, the children were asked to justify their decision. Many children took part in a lively discussion but not all children want to do this. A few of the children were asked to write their ideas on sticky notes and place them in the floorbook during the discussion providing a record of their ideas.