Floorbooks

Alison Trew & Caroline Skerry

PSTT Fellows

"We believe that using floorbooks in science promotes the development of children's ideas, thinking and reasoning skills, models the collaborative nature of science and supports effective teacher assessment."

Floorbooks

Some ideas to help you:

- To know what a floorbook is
- To recognise the value of using floorbooks for recording science
- To know what a floorbook might contain
- To be able to promote the use of floorbooks in your learning environment

Floorbooks

What is a Floorbook?

A working wall in a book?
(ongoing learning)

A display in a book?
(work completed)

A replacement for exercise books?

Floorbooks

Brainstorm

What is ‘working scientifically’?

Floorbooks

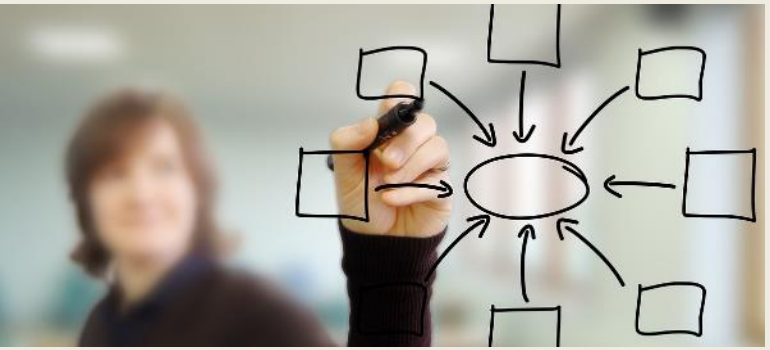
Working Scientifically Progression

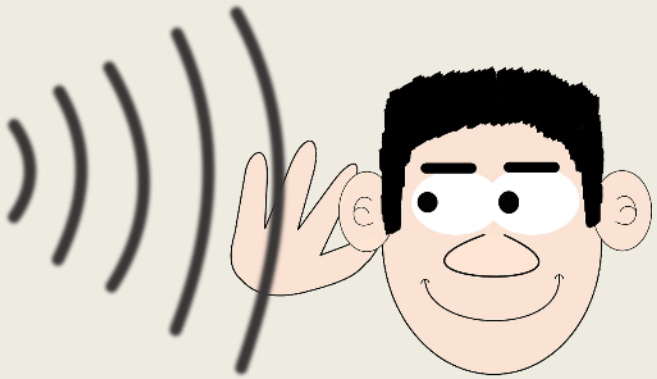
Statements taken from:
The national curriculum in England Key stages 1 and 2 framework document (2013) DfE
Statutory framework for the early years foundation stage (2017) DfE

skills \ stage	EYFS	KS1	Lower KS2	Upper KS2
PLAN	➢ choose the resources they need for their chosen activities and say when they do or don't need help	➢ ask simple questions and recognising that they can be answered in different ways	➢ ask relevant questions and using different types of scientific enquiries to answer them ➢ set up simple practical enquiries, comparative and fair tests	➢ plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
DO	➢ know about similarities and differences in relation to places, objects, materials and living things ➢ make observations of animals and plants ➢ explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. ➢ select and use technology for particular purposes	➢ observe closely, using simple equipment ➢ perform simple tests ➢ identify and classify	➢ make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, including thermometers and data loggers	➢ take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
RECORD	➢ represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories	➢ gather and record data to help in answering questions.	➢ gather, record, classify and present data in a variety of ways to help in answering questions ➢ record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	➢ record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
REVIEW	➢ talk about the features of their own immediate environment and how environments might vary from one another ➢ explain why some things occur and talk about changes	➢ use their observations and ideas to suggest answers to questions	➢ report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions ➢ use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions ➢ identify differences, similarities or changes related to simple scientific ideas and processes ➢ use straightforward scientific evidence to answer questions or to support their findings	➢ use test results to make predictions to set up further comparative and fair tests ➢ report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations ➢ identify scientific evidence that has been used to support or refute ideas or arguments

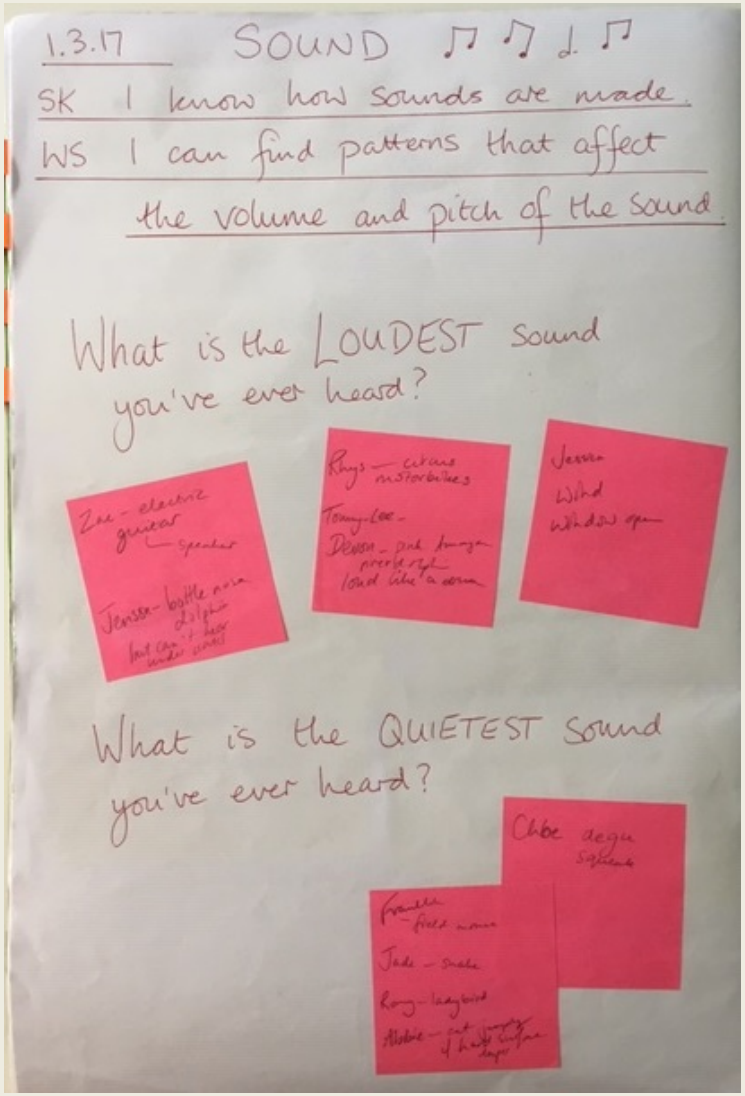
Floorbooks

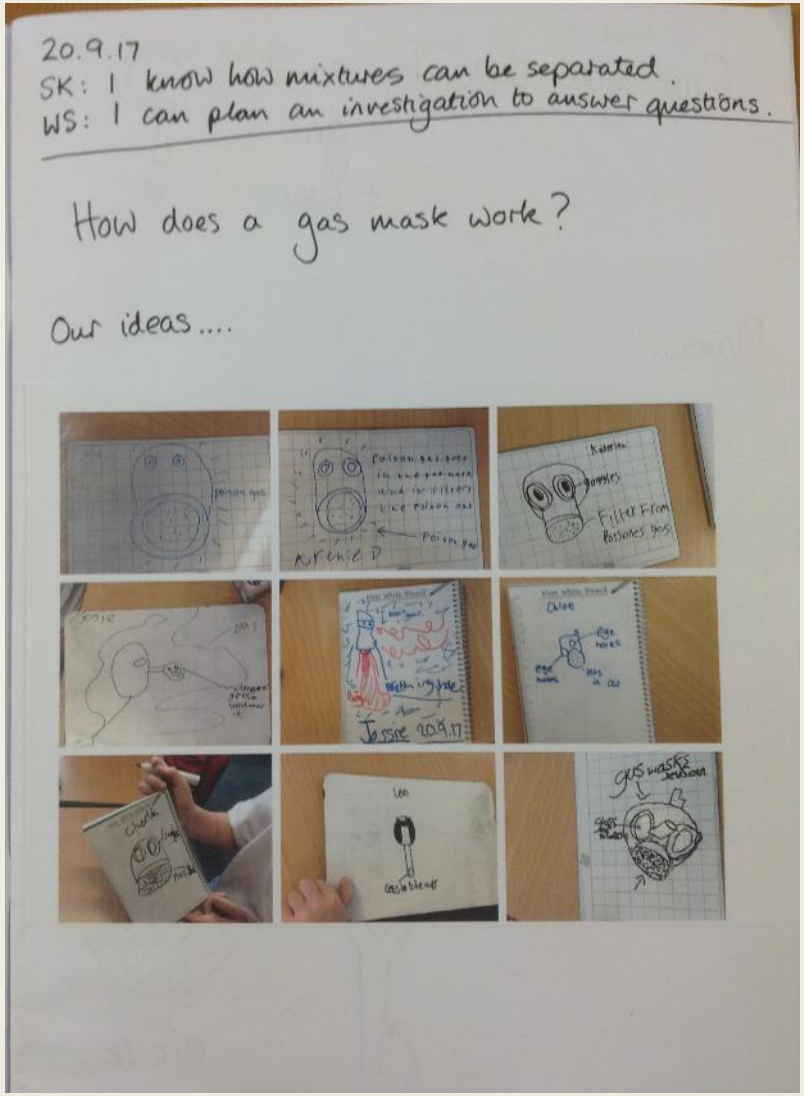
Recording in science





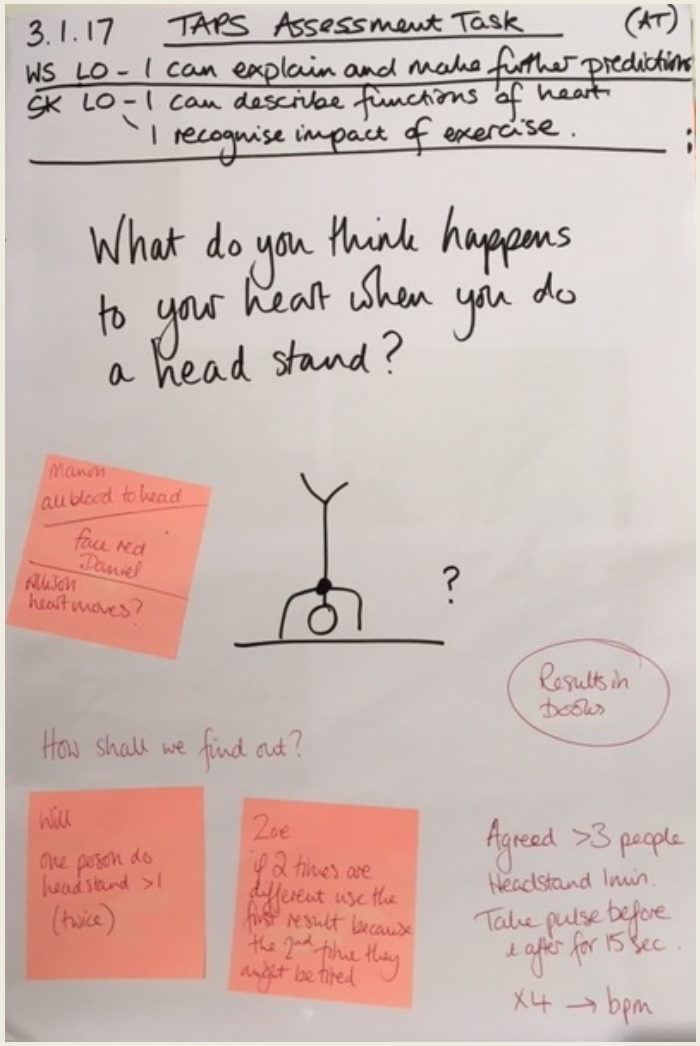
Evidence of ‘working scientifically’

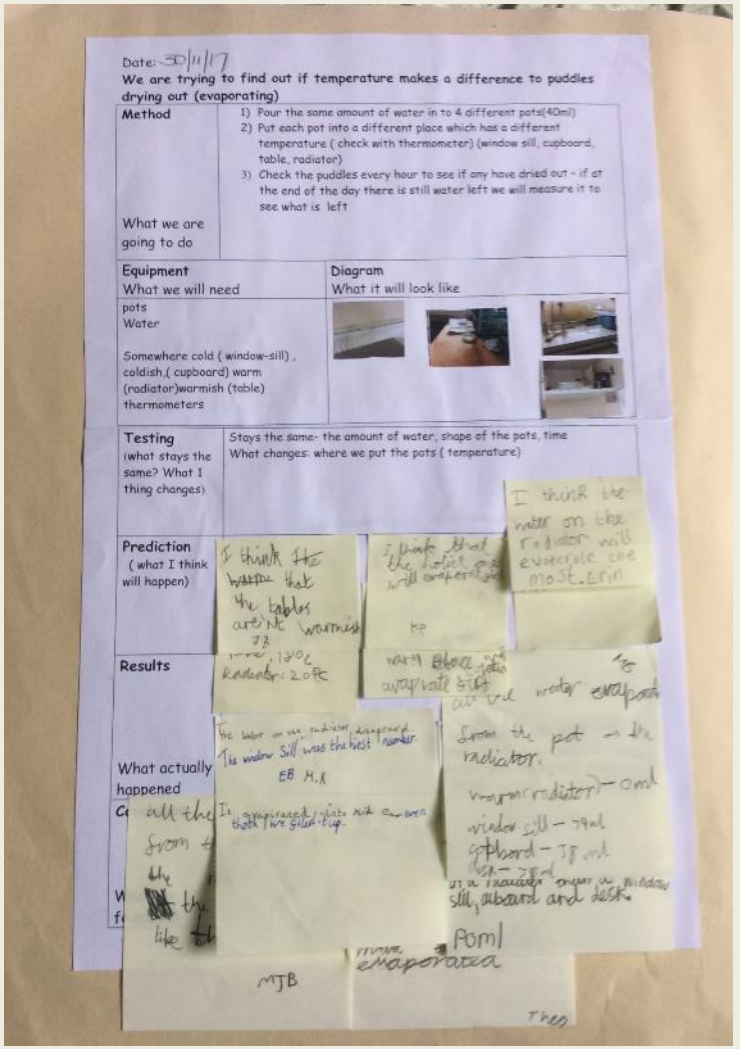




Sharing ideas

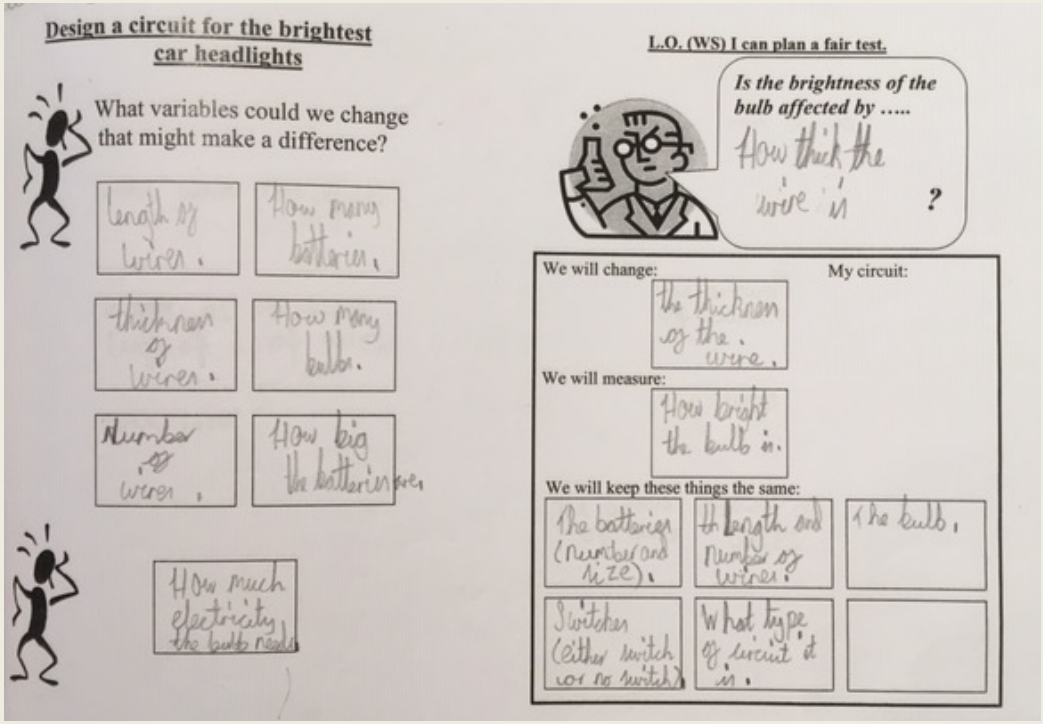
Evidence of ‘working scientifically’





Making predictions

Evidence of ‘working scientifically’



Design a circuit for the brightest car headlights

What variables could we change that might make a difference?

- Length of wires.
- How many batteries.
- Thickness of wires.
- How many bulbs.
- Number of wires.
- How big the batteries are.
- How much electricity the bulb needs.

L.O. (WS) I can plan a fair test.

Is the brightness of the bulb affected by …..

How thick the wire is ?

We will change: My circuit:

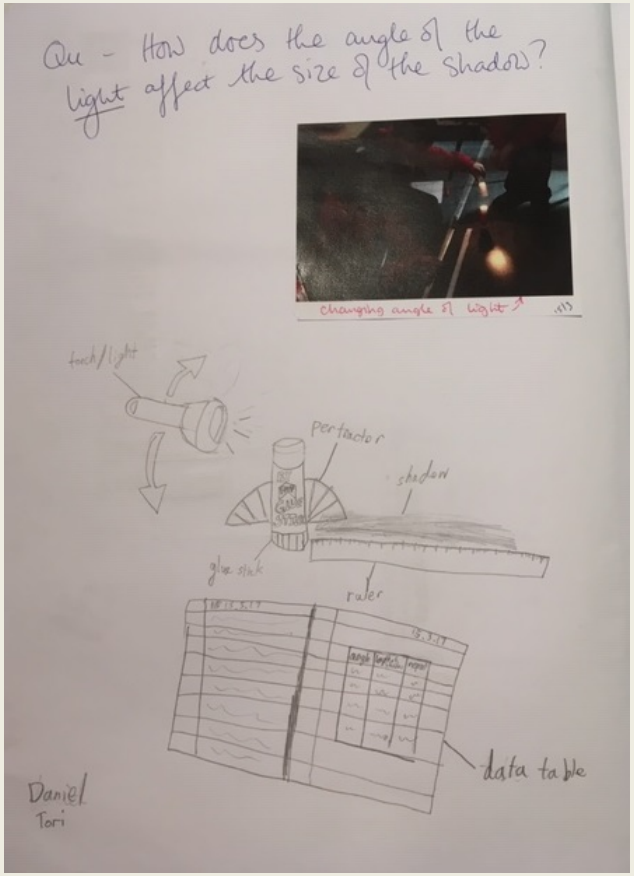
The thickness of the wire.

We will measure:

How bright the bulb is.

We will keep these things the same:

The batteries (number and size).	The length and number of wires.	The bulb.
Switches (either switch or no switch)	What type of circuit it is.	



Qu - How does the angle of the light affect the size of the shadow?

changing angle of light

torch/light

protractor

shadow

glue stick

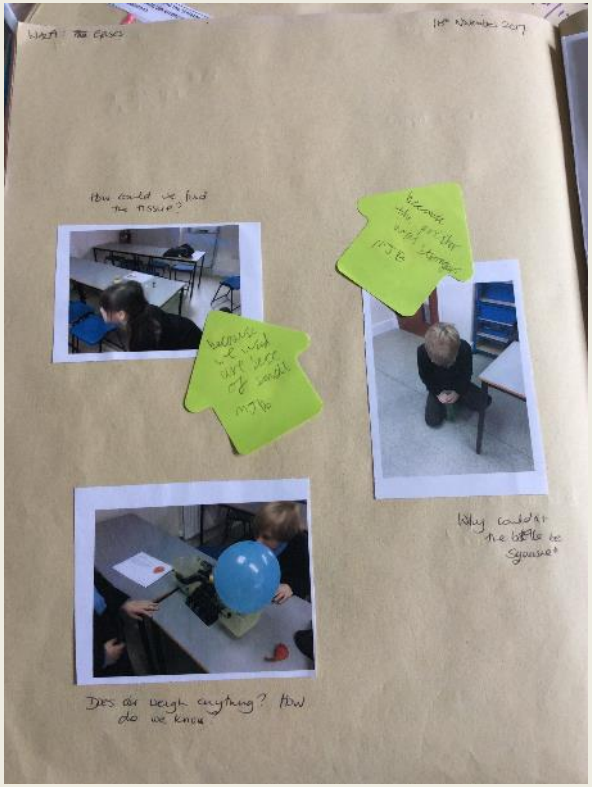
ruler

data table

Daniel
Tori

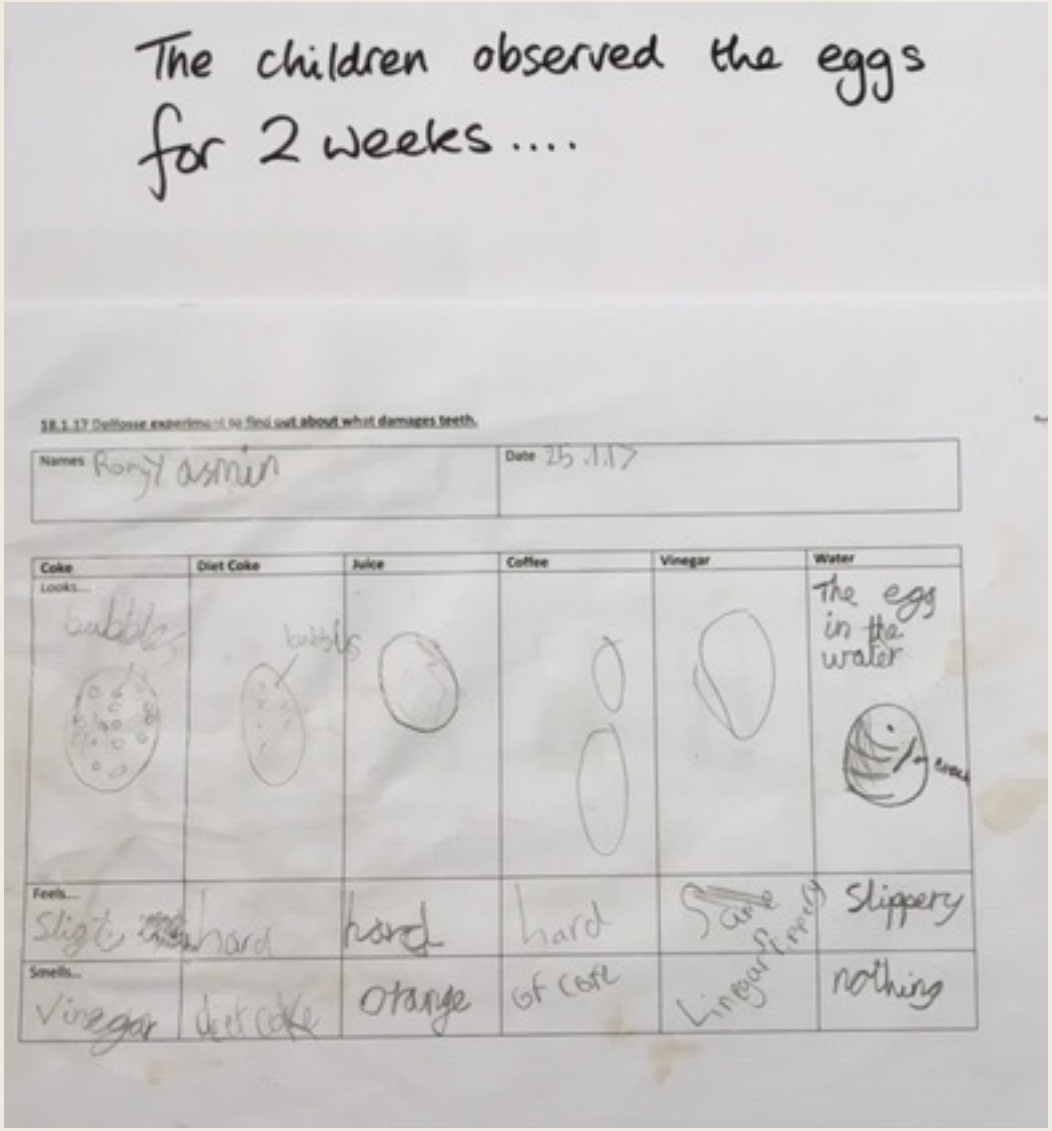
Planning

Evidence of ‘working scientifically’



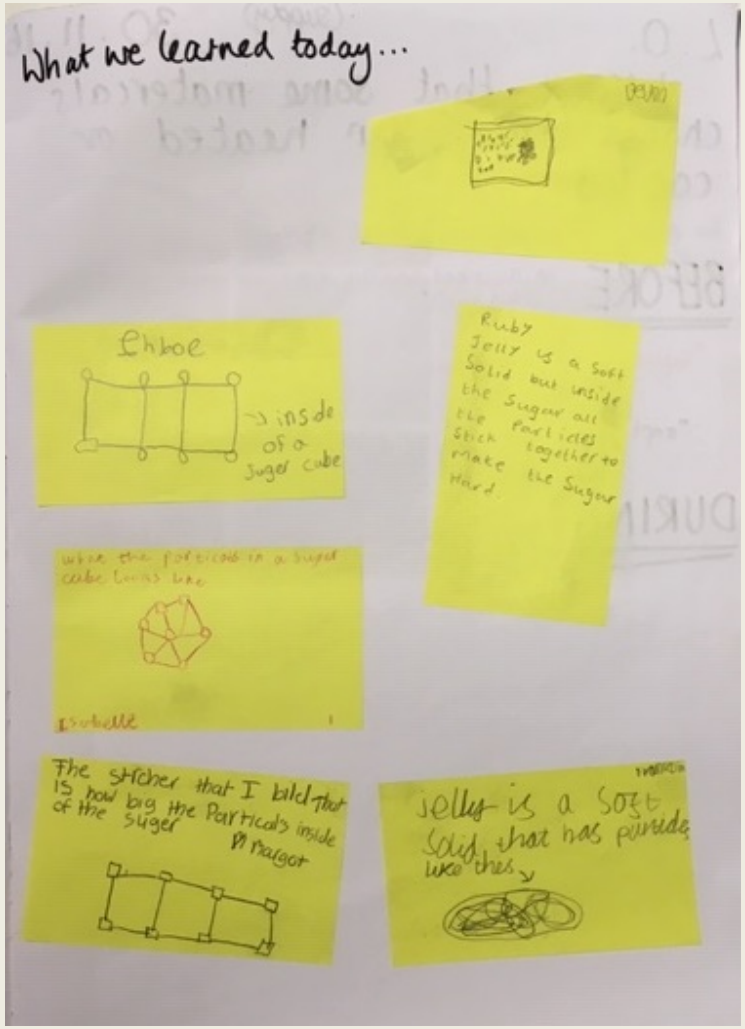
Observing and measuring

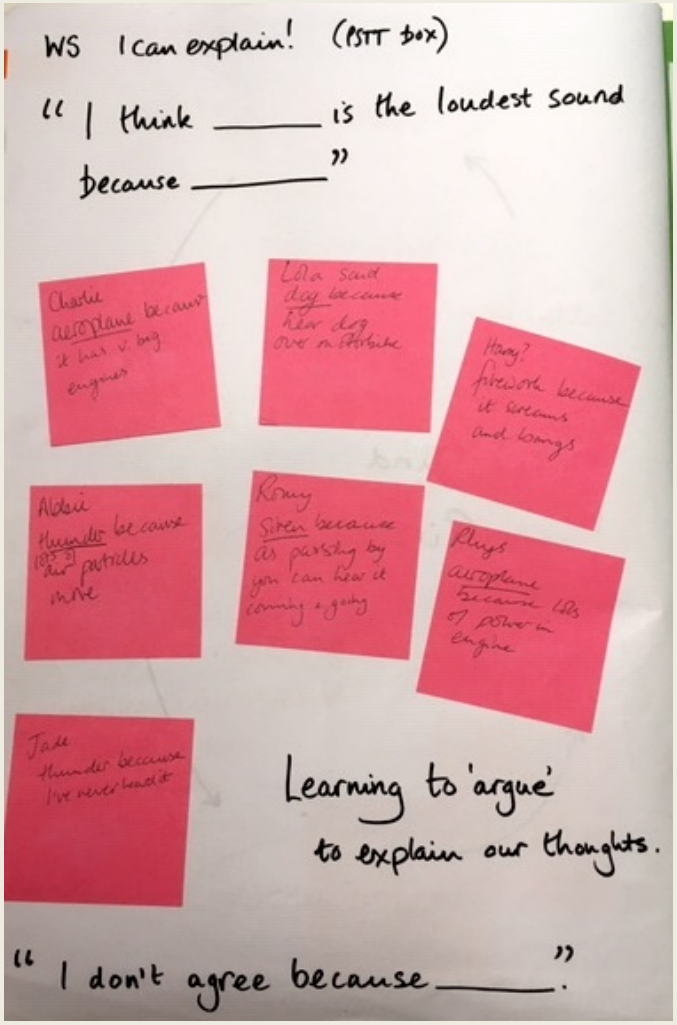
Evidence of ‘working scientifically’



Recording results

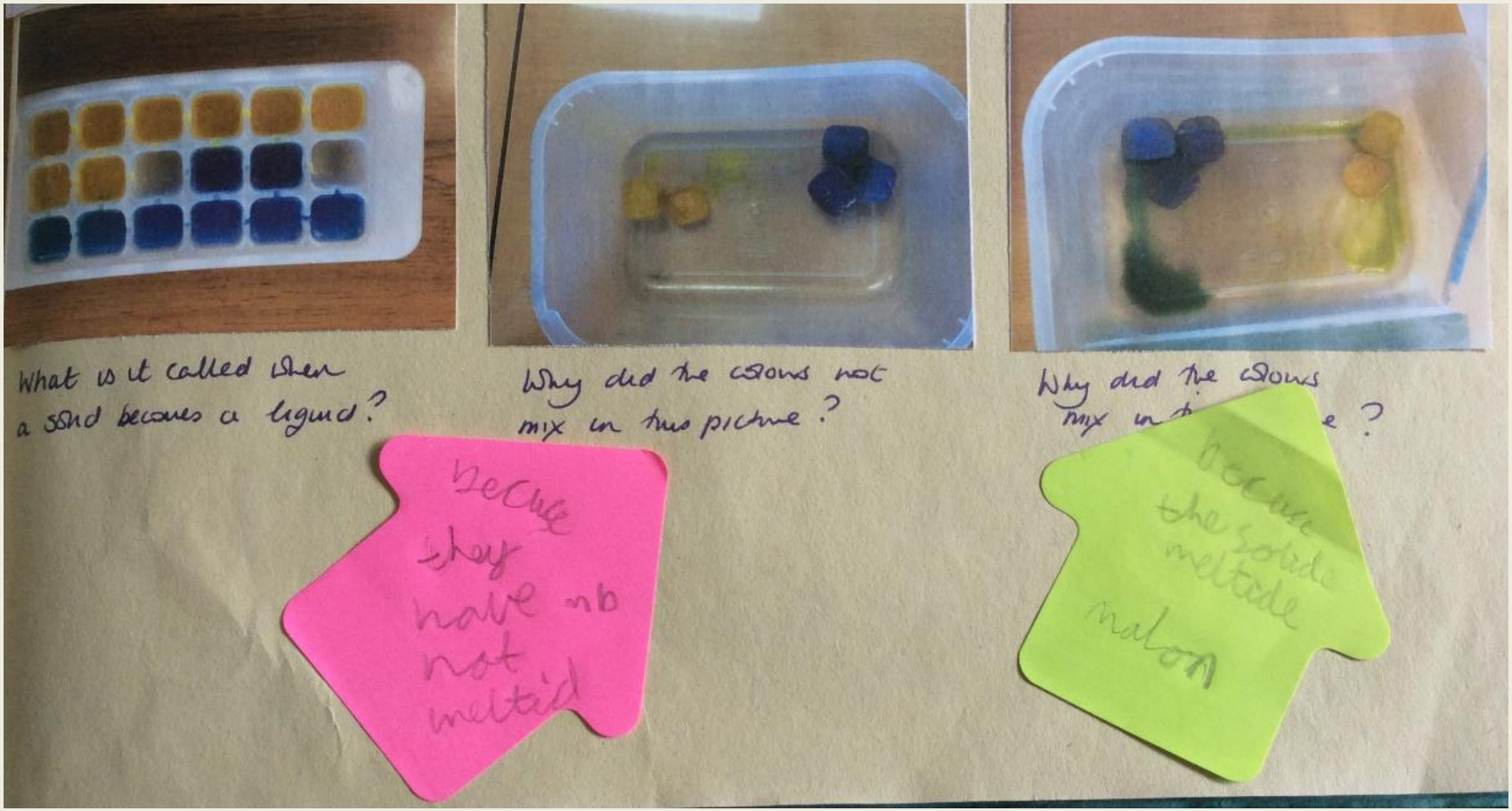
Evidence of 'working scientifically'





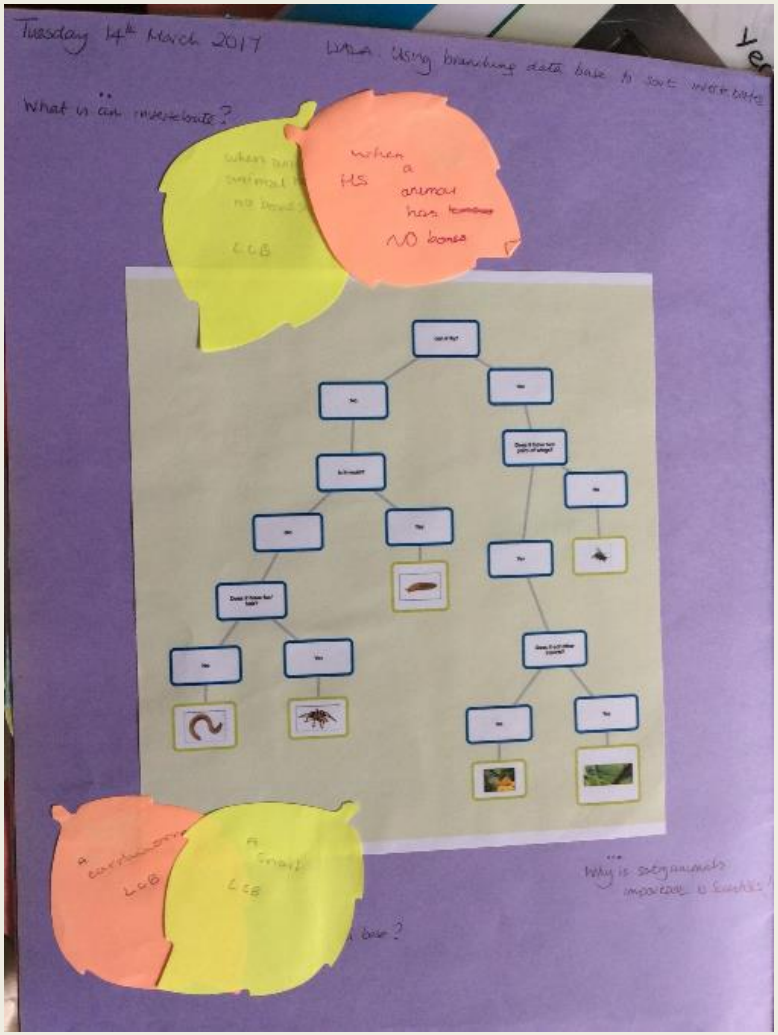
Conclusions & evaluation

Evidence of different types of enquiry



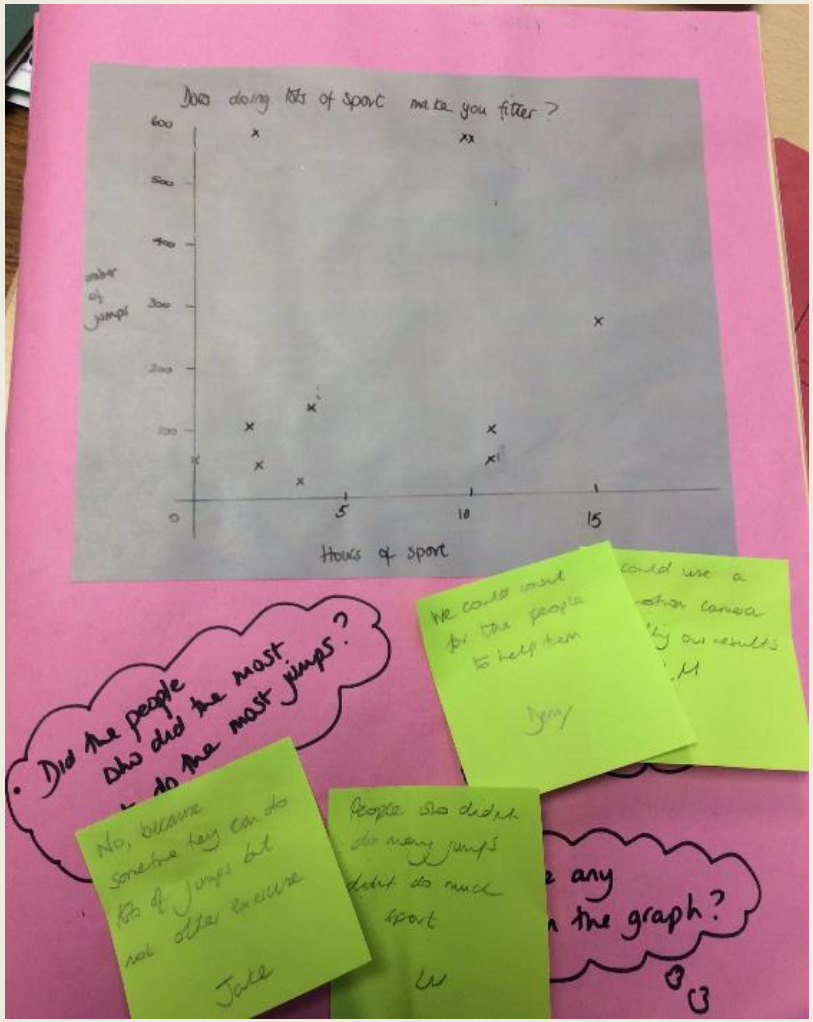
Observing over time

Evidence of different types of enquiry



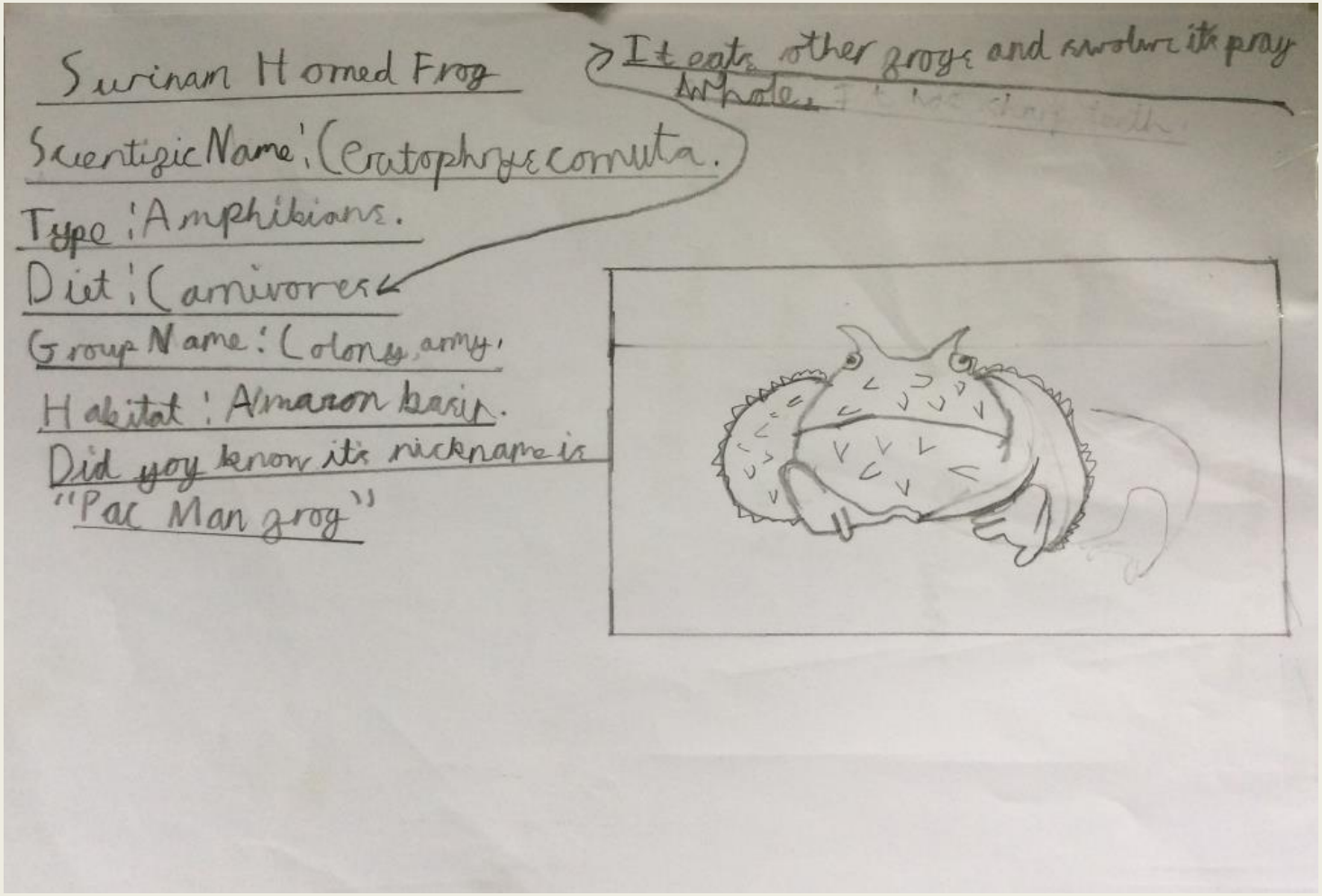
Identifying and classifying

Evidence of different types of enquiry



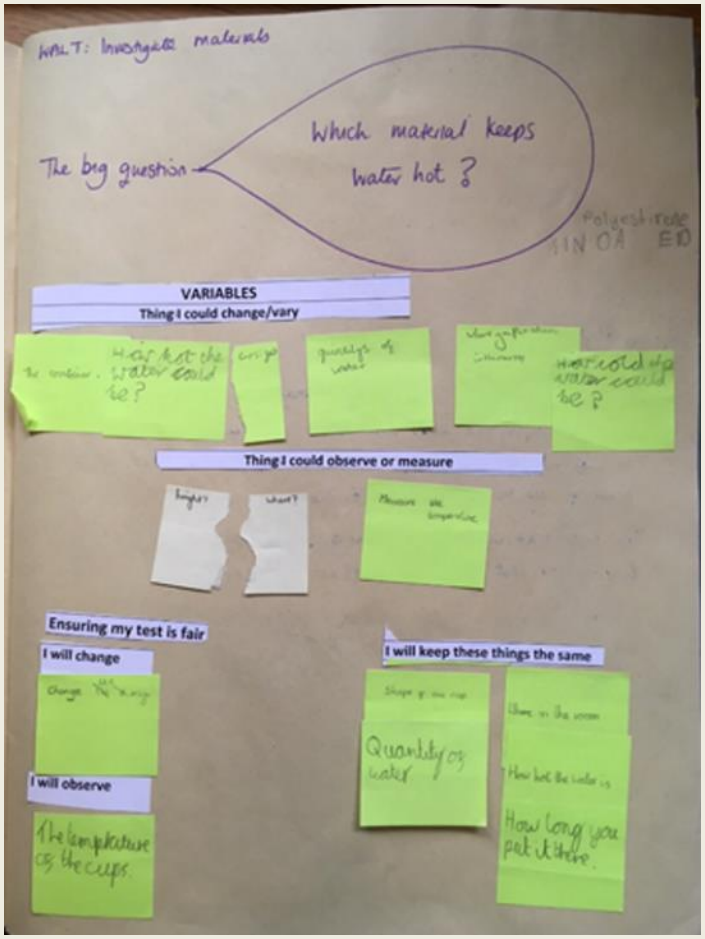
Pattern seeking

Evidence of different types of enquiry



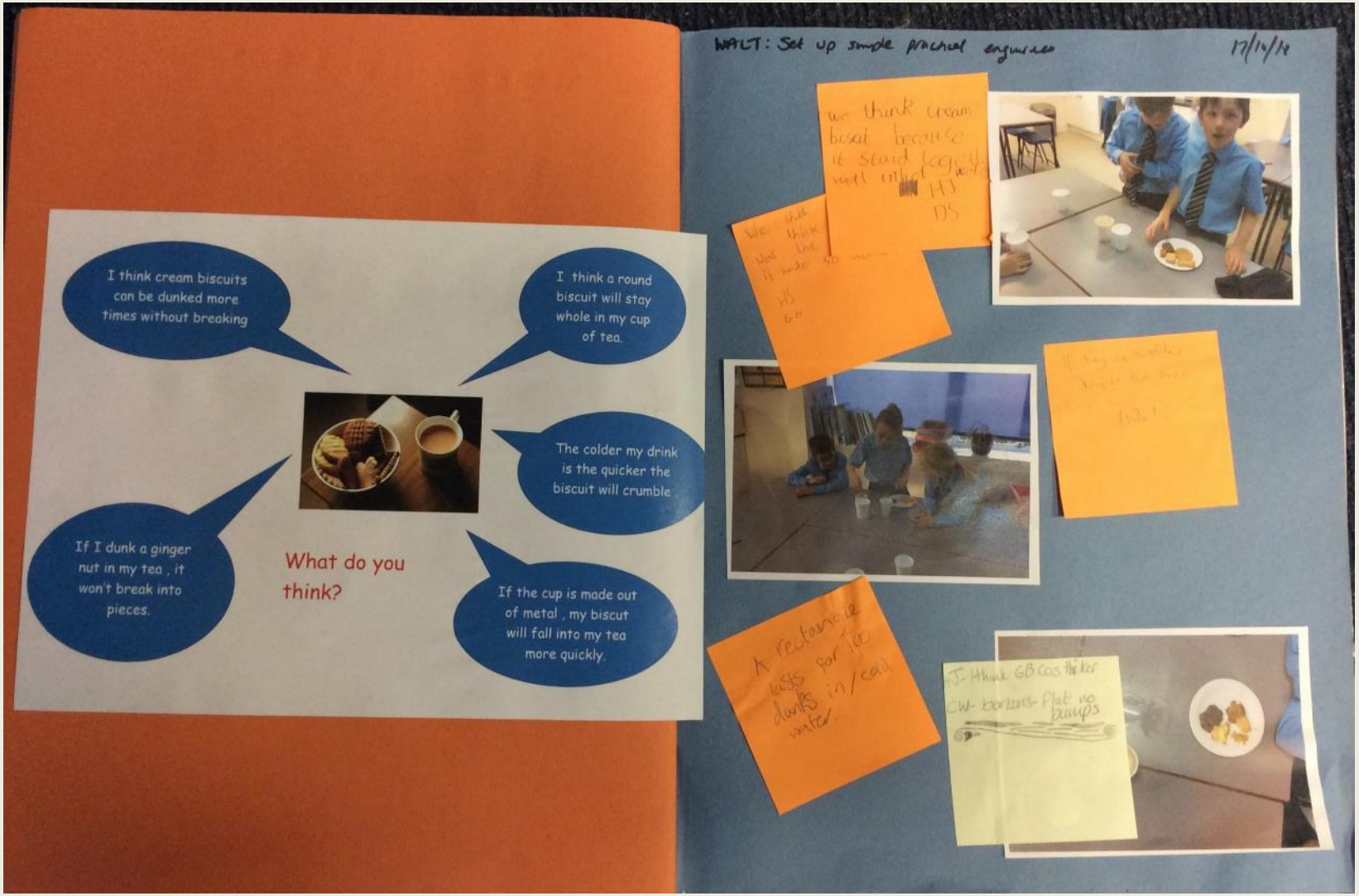
Research

Evidence of different types of enquiry



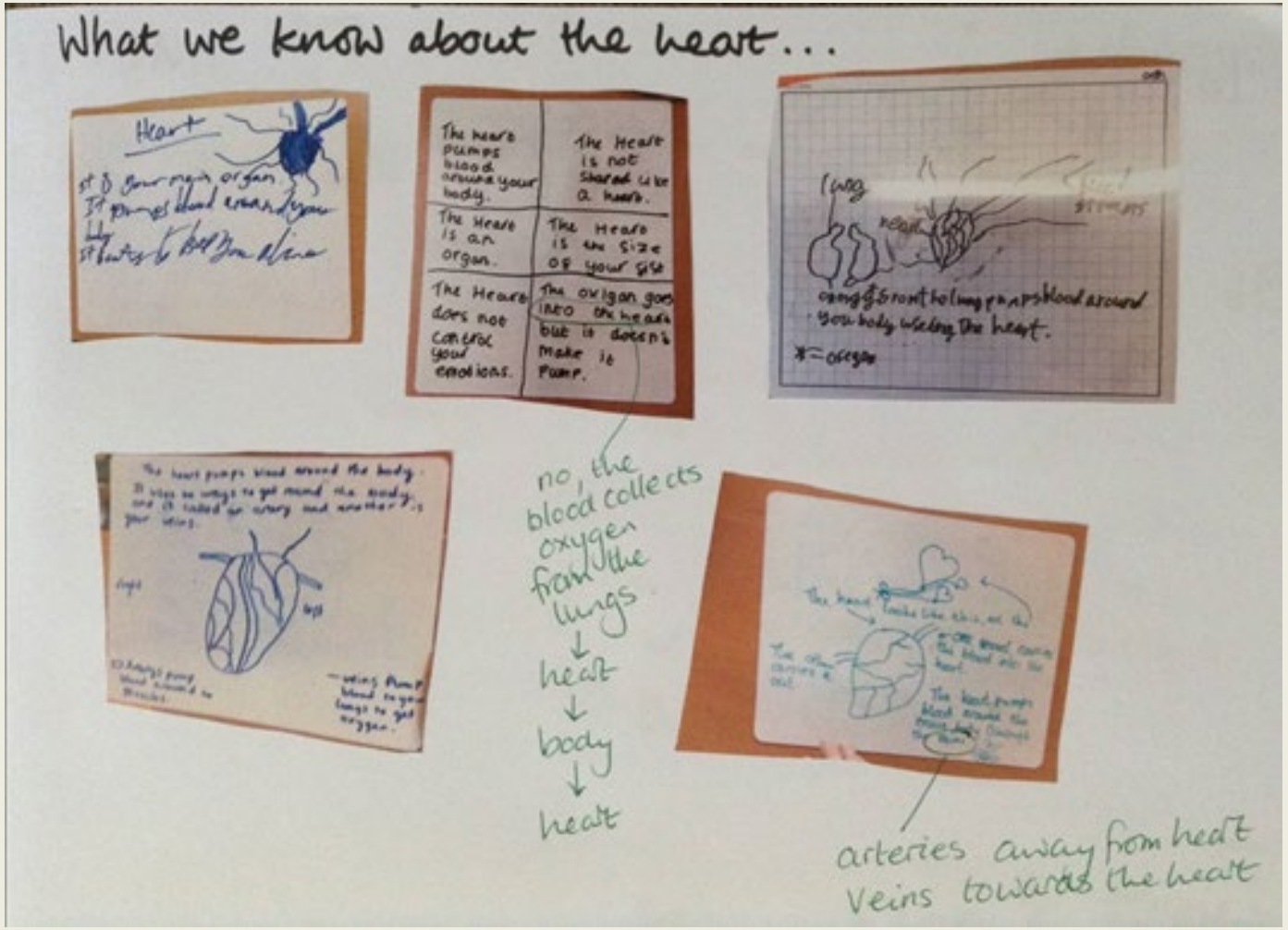
Comparative and fair testing

Evidence for assessment



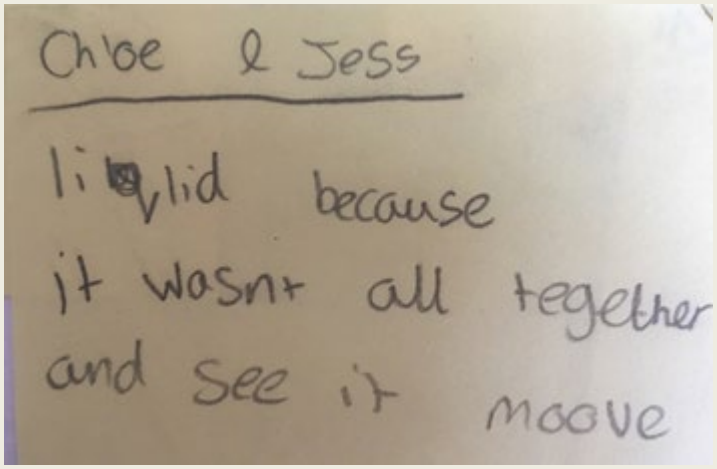
Conceptual understanding

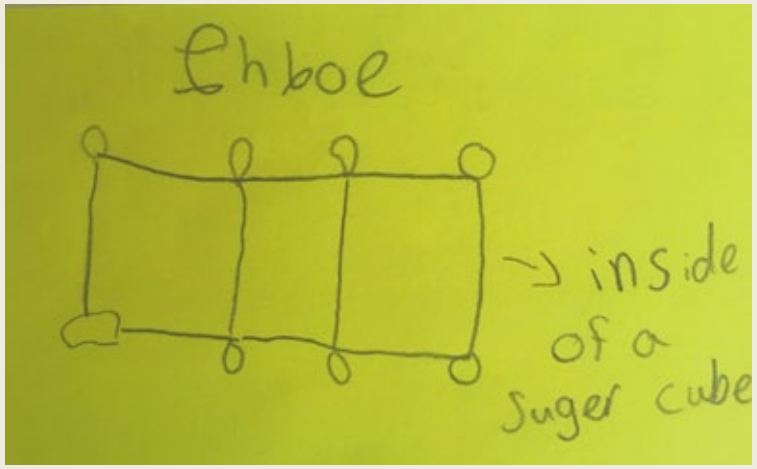
Evidence for assessment



Formative assessment / assessment for Learning

Evidence for assessment

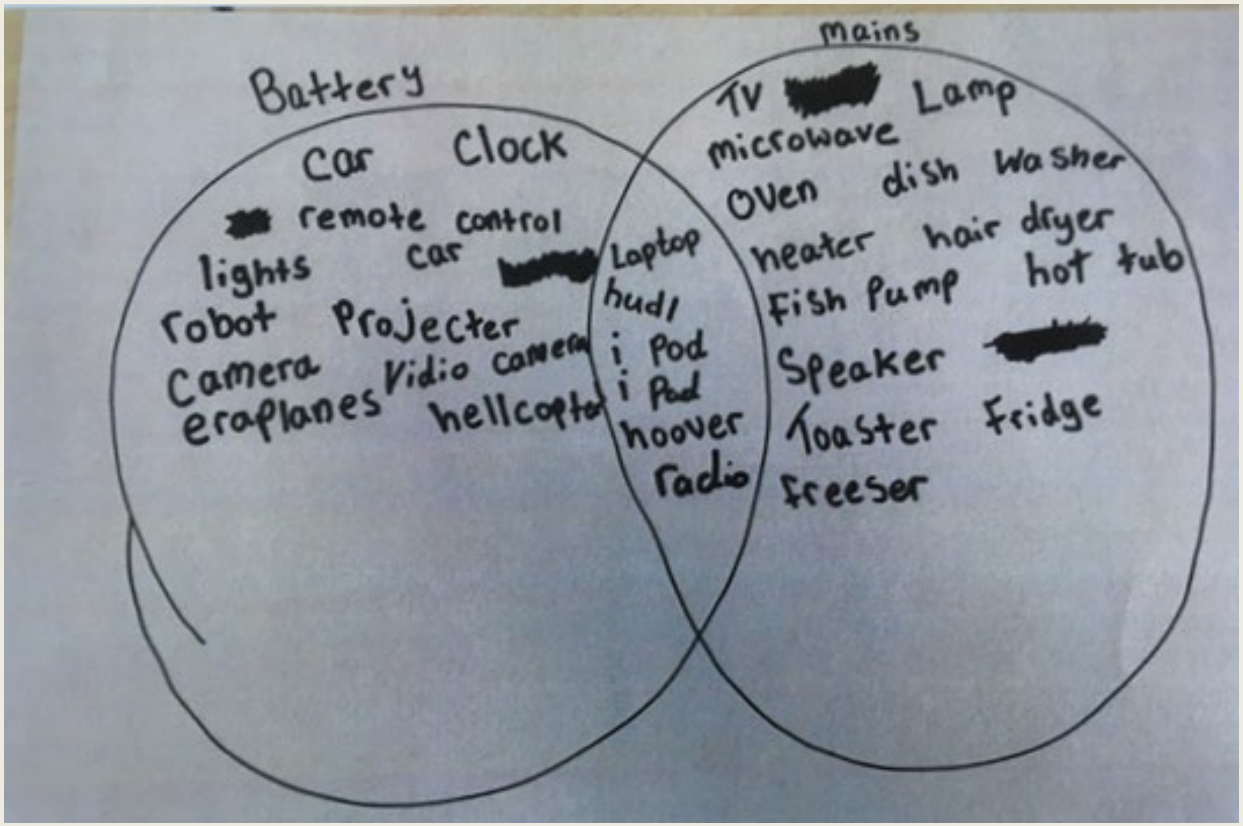




2 weeks later

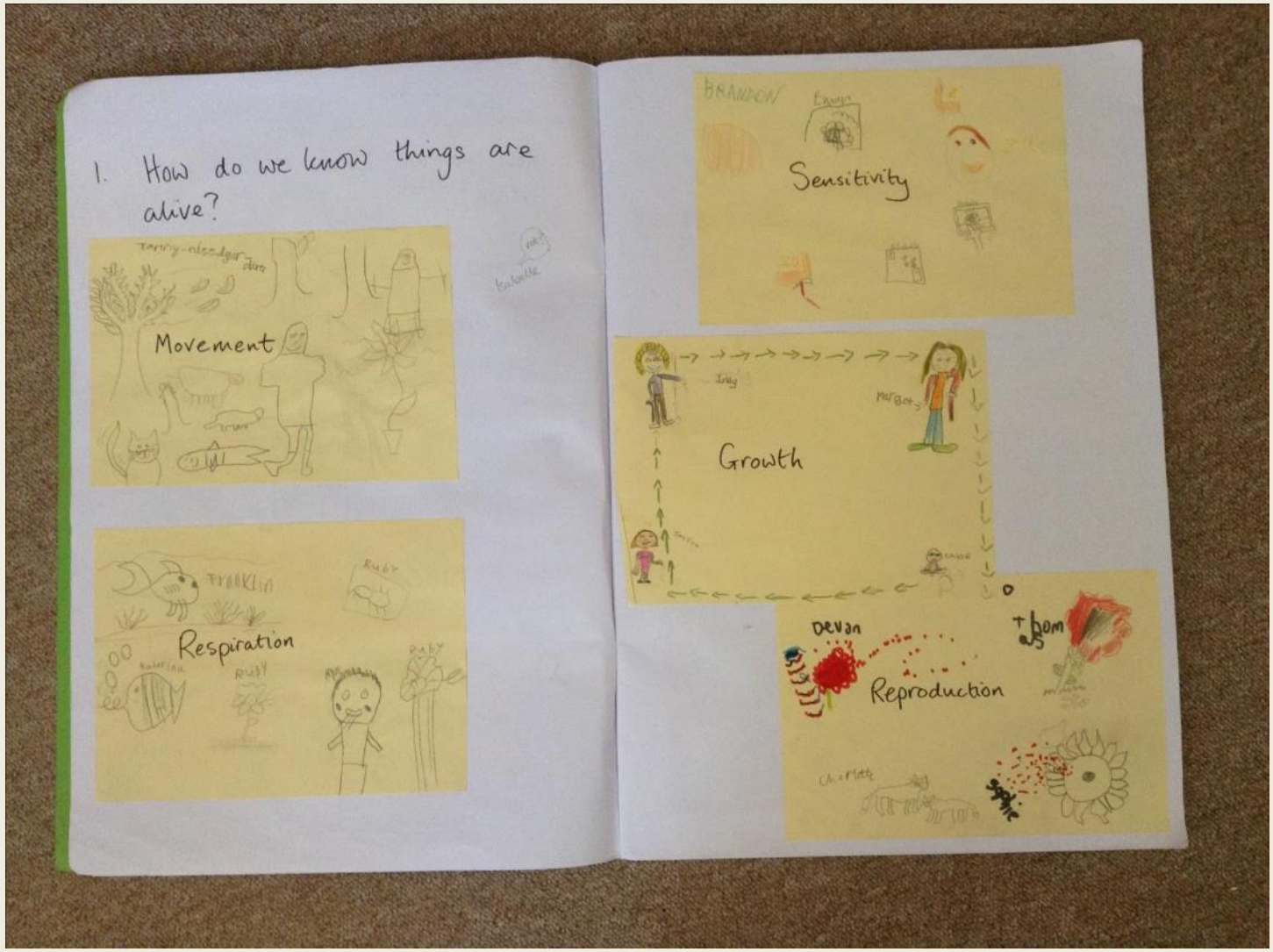
Tracking pupil progress

Evidence for assessment



Summative assessment

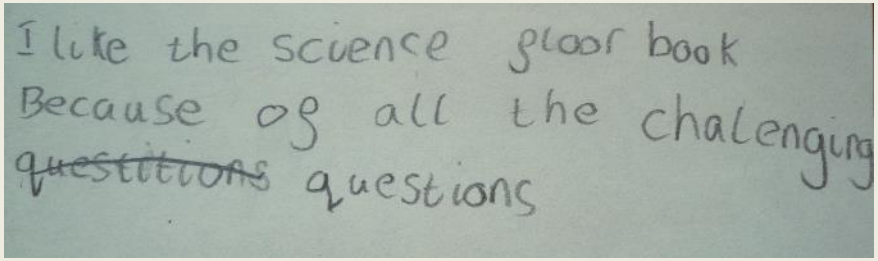
Collaboration & group work

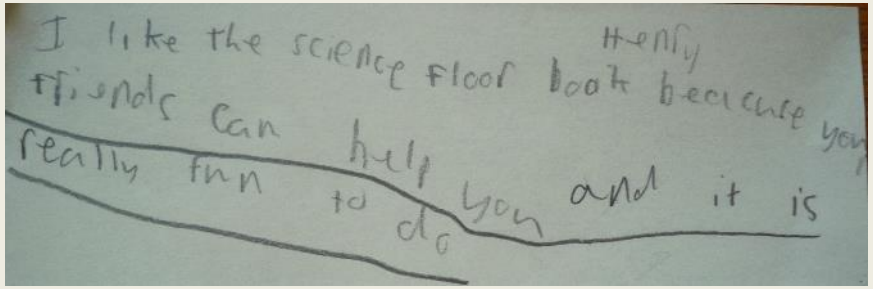


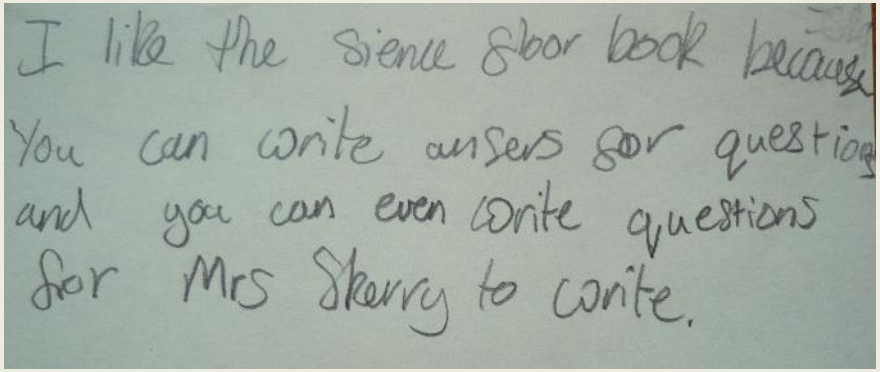
feelings

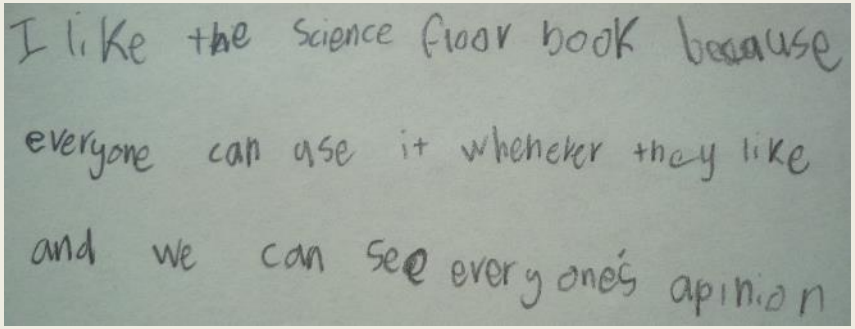
thoughts

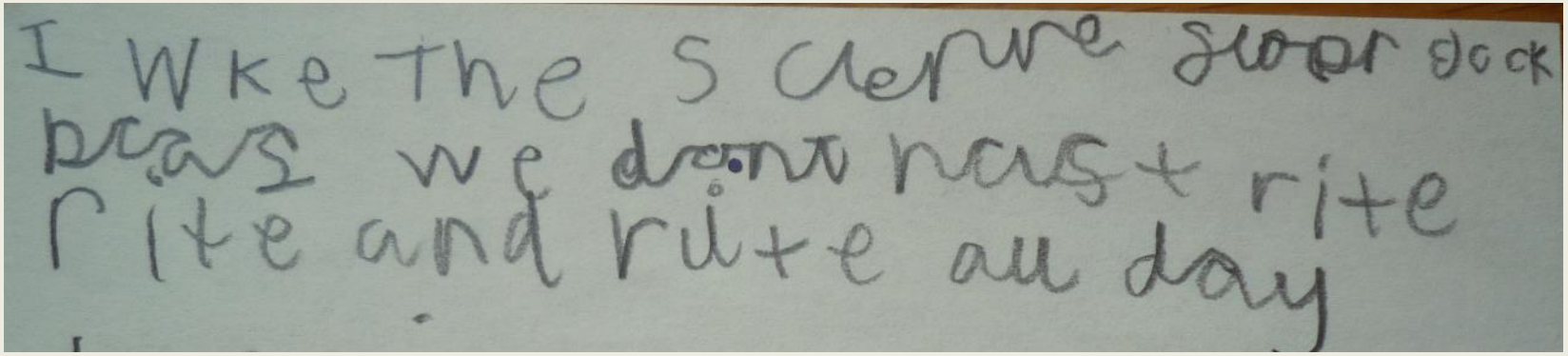
Motivation


I like the science floor book
Because of all the chalenging
~~questitions~~ questions


Henry
I like the science floor book because you
friends can help you and it is
really fun to do


I like the sience floor book because
You can write answers for questions
and you can even write questions
for Mrs Skerry to write.


I like the science floor book because
everyone can use it whenever they like
and we can see everyones apinion


I Wke the S clerre floor dock
bcas we dont nas+ rite
rite and ri+e all day

Floorbooks

Advantages / disadvantages?

For children?

For teachers?

For parents?

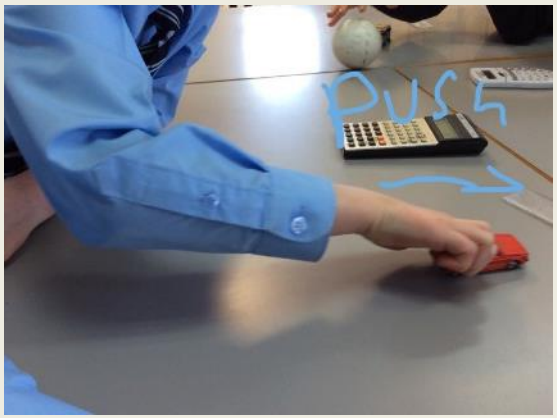
Be aware of…

- Differentiation
- Recording attainment
- Misconceptions
- Individual learning evidence
- Marking

Floorbooks - definition

- a team approach to learning
- collaborative recording
- a ‘working’ and interactive book
- a book available at all times for children & others (including Ofsted) to read
- a record to pass on to next teacher
- a record that can be photographed easily for digital evidence

Floorbooks in the future



- Children taking photos and evidencing
- Filming
- Vocal recording
- Digital portfolios, e.g. Seesaw / Tapestry
- QR codes in the floorbook (to link to above)

Any questions?

alison.trew@pstt.org.uk

For more information on the Primary Science Teaching Trust and access to a large selection of PSTT resources, visit our website:

pstt.org.uk

/primaryscienceteachingtrust

@pstt_whyhow

To help you find high quality resources to support your primary science teaching quickly and easily, we provide links to excellent resources for teachers, children and families on our Wow Science website :

wowscience.co.uk

and we regularly provide further suggestions on how to use these in the classroom through social media platforms:

/wowscience

@WowScienceHQ

How to use Floorbooks

Slide notes to accompany PowerPoint

Slide	Notes
1	Alison Trew & Caroline Skerry have taught in primary schools in SW. Both have used floorbooks in science lessons for many years with pupils from Rec to Y6.
2	You may want to download **Working Scientifically Progression Grid** to view alongside this PowerPoint. It can be downloaded from Floorbook Resources.
3	**What is a floorbook?** Discuss… • Do you use working walls? • Which subjects? • Are there advantages/disadvantages of working walls over displays? We will consider different ways to use floorbooks to record, track and assess children's science learning.
4	**What skills should children develop when they are 'working scientifically'?** Activity: cut up Working Scientifically Progression Grid & ask teachers whether they can decide which skills should be taught & assessed at each key stage.
5	Share Working Scientifically Progression Grid with teachers. **If the children are 'working scientifically'…** **- What will the children be doing?** Feedback: talking, listening, arguing, persuading, planning (orally or written), measuring, recording data (tables/tally charts/filming/photographs/drawing), presenting findings (drama/hot-seating, films/audio recording, PowerPoints, written work in exercise books), reflecting, thinking, editing, …? **- What will the teacher be doing?** Feedback: listening, watching, scaffolding, demonstrating, verbal feedback, written feedback…?
6	**What is happening in your classroom at the moment?** DISCUSS
7	**Evidence of working scientifically – sharing ideas** LHS - This teacher asked the children 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.

	Targeting a few children in this way enables teachers to gain insight into children's learning which might otherwise be missed. **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.** RHS - 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.
8	**Evidence of working scientifically – making predictions** LHS - This teacher has used sticky notes to record some children's predictions before starting an investigation. RHS - This teacher used a formal planning frame with the whole class to plan an investigation. Children made predictions on sticky notes and these are included in the frame.
9	**Evidence of working scientifically – planning** Both examples from age 11 LHS - This child 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. RHS - This child 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.
10	**Evidence of working scientifically – observing and measuring** LHS - Observing properties of gases: smelling, touching, looking Centre - Children were asked to 'observe closely' and record what they saw. 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?' RHS - The teacher took photographs of some children during the lesson as evidence that they could measure length accurately.
11	**Evidence of working scientifically – recording results** These children were working as a class, observing six egg shells 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. **Note: It is not always necessary for children to record everything in their own books.**
12	**Evidence of working scientifically – conclusions and evaluation** LHS - Children 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. RHS - Many children took part in a lively discussion about sound 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.
13	**Evidence of types of enquiry – observing over time** The children observed coloured ice cubes over time. Some children were asked to comment on what they saw.
14	**Evidence of types of enquiry – identifying ad classifying** These children worked in pairs, using 'Popplet' (an App which helps students think and learn visually). They were learning how to create a branching database / tree diagram to classify invertebrates. On this occasion, the teacher chose one good example to put in the floorbook, so the class can use the classification key. After the lesson, the teacher added differentiated questions (one dot/two dot/three dot questions). The sticky notes are the children's responses to these questions.
15	**Evidence of types of enquiry - pattern seeking** The topic being taught was keeping healthy, with children ages 7-8 years old. This lesson was about muscles. The teacher elicited from the children the question, "Does doing lots of sport make you fitter?" The class discussed how they could answer this question: compare the number of hours sport completed per week with the number of star jumps they could carry out without stopping. The teacher drew the graph directly on to a large piece of paper and the children shared their results. This ensured that all the children are involved in the recording process and were able to access the learning which is looking for a pattern (rather than plotting a graph). The class discussed the reliability of the results: the children realised the unlikelihood of someone doing 600 jumps! This prompted further discussion about a possible pattern and how to improve the data. During the discussion the teacher wrote some of the children's ideas on sticky notes and kept these and the graph in the floorbook.

16	**Evidence of types of enquiry - research** The children were asked to choose an animal that they were interested in and research it. They were given some specific criteria to find out. The outcome of the lesson was to recognise the diverse diets of different animals around the world. This is one of a selection of children's examples the teacher put in the floorbook.
17	**Evidence of types of enquiry – comparative and fair testing** This is an example of a fair test investigation with a class of 9-10-year-olds. The lesson started with a discussion about how horrible it was to drink cold tea. The children agreed to investigate the question, "Which material keeps water hot?" Before the lesson, the teacher had prepared the subheadings which she used with the whole class to scaffold the children's thought processes. For each subheading the children discussed their ideas in pairs, shared their ideas with the class and some of the children were asked to put their ideas on sticky notes so that the teacher has a record of the class considering which variables they need to control in their investigation.
18	**Evidence for assessment – conceptual understanding** This teacher has used a visual prompt (similar to a **Science Concept Cartoon©)** at the beginning of a sequence of work to check conceptual understanding. Several ideas are shared with the children. The children are given time to reflect on these ideas and then write their own idea on a sticky note. If they agree with one of the speech bubbles, they must say why. Occasionally, the teacher will scribe for a poor writer and might prompt children who are struggling - this teacher records 'S' for support on post its where a lot of help was given.
19	**Evidence for assessment – formative assessment** At the start of a topic, the teacher has asked the children to draw on their white board what they know about the heart. A few responses showing a range of abilities were photographed. This simple **elicitation task** showed what the children knew: • All the children knew that the heart pumped blood around the body and it is an organ • A few children knew that oxygen was involved but not how • One child mentions veins and arteries but cannot describe the differences • None of the children knew about the double circulatory system From this record, the teacher was able to plan a sequence of lessons appropriate for the class.
20	**Evidence for assessment – tracking pupil progress** Originally these girls thought that sugar was a liquid because you can pour it. After some teaching input and exploring many types of solids, they understand that sugar is a solid at room temperature and were able to draw what they thought the inside of a sugar cube looks like. The second sticky note shows that

	they understand that particles within a solid structure like sugar are fixed together and cannot move apart.
21	**Evidence for assessment – summative assessment** By looking at a child's comments, actions and understanding, over a period of time, the whole floor book provides valid, reliable and manageable evidence for assessment. These children (age 8-9) worked in groups of 4 to identify and classify types of appliances according to whether they are mains electricity or battery powered. They recorded their work on a large piece of sugar paper. The teacher photographed the work from each group, made a little booklet and stuck this in the floorbook. Every child has contributed, and the teacher can be confident that these children can present their data in an appropriate way.
22	**Collaboration and group work** Many investigations require that children work in groups in science lessons. A floor book is an ideal way to record group work and avoids the need to photocopy outcomes for individual records. Children worked in groups of 4 to make a poster to explain one of these characteristics. They then presented their poster to the class and were given feedback from their peers. After making small improvements, the posters were stuck into the floorbook and were referred to during the sequence of work.
23	**Motivation** <u>Ideas are valued by teacher</u> Writing down a child's idea values it, especially if you write their name/initials next to their comment. Children like to see their thoughts on paper, and the process encourages children to clarify their own ideas by expressing them out loud. <u>Ideas are valued by peers</u> Writing the children's comments down, helps you to concentrate and listen carefully to what each child has to say. During class discussions, if you repeat a child' s comment aloud as you write it, there is no 'gap' in which children might lose attention. It also makes sure that everyone can hear it which shows the children that they are expected to listen to each other's ideas. **Would you include 'incorrect' ideas?** Discuss… If the floorbook is to be a useful assessment tool, it should include all kinds of children's ideas (correct or incorrect) but do not leave misconceptions in the book. Having recorded an incorrect idea, you can plan further teaching input or discussion and afterwards, you could offer the child/children another opportunity to explain their thoughts. Perhaps using a different colour sticky note next to the original to signal a change of idea. **It is good to model changing ideas.** Scientists do change their minds & we should model that this is acceptable.

24	**Children's views on floorbooks** The presence of the floorbook is encouraging some children to ask questions & to find out more: ***"I like the science floorbook because of all the challenging questions."*** ***"I like the floorbook because you can write answers for questions and you can even write questions for Mrs Skerry"*** Some children have relatively poor writing skills & don't enjoy writing, but are able to succeed in science by showing knowledge & conceptual understanding in ways other than writing (all recorded in the floorbook): ***"I like the science floorbook because we have to write, write and write all day."*** ***"I like the science floorbook because your friends can help you and it is really fun to do."*** The floorbook shows children that they can learn from other children's ideas (just as scientist do): ***"I like the floorbook because everyone can use it whenever they like and we can see everyone's opinions."***
25	**What are the advantages / disadvantages of using floorbooks?** ASK TEACHERS WHAT THEY THINK & DISCUSS….. **Advantages for children?** • Floorbooks can be used with any age group but are especially useful with younger children and for others who have limited writing skills. • Floorbooks can motivate children because they enjoy seeing their photos and their work in the class book. • Floorbooks provide an opportunity to reinforce key vocabulary because children like to browse through the floor book. This rarely happens with children's individual books. • Less time given to writing & more time available for developing and justifying ideas. *But be aware:* • Some children cannot / do not like having their photo taken. • Children should still be taught to record and write in science. **Advantages for teachers?** • Teachers can gather and record evidence of practical / oral science skills • Teachers can gather & record evidence from children those who have limited writing skills

	• With experience, most of the floor book can be completed during or just after the lesson, saving time photocopying work later and marking. *But ask yourself:* • Do I have evidence of science skills from every child? • Can I show progress across the year? **Advantages for parents?** • An opportunity to see the diversity of science teaching and learning experienced by their children. *But be sure:* • There are no negative comments about any child in the book if you share with anyone. • Photos are not named unless you have permission to share them. • Is every child shown in the floor book a similar number of times?
26	**Be aware of:** • Differentiation - record 1 piece of work per ability group where appropriate • Spending a long time making the floorbook – it is a working document, not a display in a book, but it could be displayed on a stand. • Formal assessment – have a separate assessment file for recording children's attainment in assessment activities (e.g. TAPS). • Misconceptions- ensure that these are addressed • Inclusivity - ensure all children are included in the book/ represented by ability group • Floorbooks are not an excuse for not marking, just different marking, keeping things manageable.
27	Consider: **Will your children have their own exercise books running alongside the floorbook?** **What will you do with 30 copies of work if they don't?**
28	Alternatives…
29	Any questions?
30	Contact PSTT