Pupil Voice Analysis – November 2021 – Sam Mallard

Four pupils from each year group were asked these questions with SM. They had their science books to be used as support. The session began by the children told that today's focus was to get their ideas about science in our school and for them to share strategies and concerns.

How often do you have a science lesson in your class?

All children were able to say that science happened in the school on a regular basis. When it was happening was inconsistent. Some year groups ensure science is taught every week; other year groups said that it happened every "…other week," The children's books supported this.

What is science to you?

Many pupils were able to answer this question enthusiastically and when unable to do they were asked, "If someone said the word 'science' to you, what is the first thing that you think of?' Many pupils made reference to topics that they had and currently are studying and used vocabulary associated with it (e.g. digestive system – organs). Some pupils specifically made comment and reference to skills that they had learnt, in addition to what they experience in science.

KS1 – materials….Float…Objects…what's important.

LKS2 – trying…working and thinking…doing different jobs (careers e.g. working with the body – doctor)…going out and collection…investigations – finding things that people haven't already found out……

UKS2 – testing…doing an experiment…investigations…every lesson is like a mystery – you have to solve it to find out…working in laboratories…

What do you like about science in our school?

All pupils commented on how they enjoyed doing practical science and when asked why, replies linked to being able to carry out experiments and find out new learning. They particularly liked being hands-on, making references and using their books to show example lessons that they have participated in so far this year. Children were able to, when asked, state what they were learning about in that lesson and used appropriately-linked subject vocabulary.

Some pupils made reference to the usefulness of knowledge organisers. Year 4 children in particular spoke highly of this, saying that it was useful as they could go back to it to identify vocabulary if they need to use it. When knowledge organisers were not used as much in books, most pupils believed that they had the potential to be useful because they can have a place to turn to in their books to help reference something if they need to.

Furthermore, pupils made reference to how they liked seeing Science link to other areas of learning. For example, Year 1 pupils referenced that they enjoyed doing Science in Reception, where they got to apply science knowledge and skills to tasks that they carried out independently (referencing the sunflower activity where they had to care for a sunflower). Year 4 spoke enthusiastically about the link between computing and science in their learning at the moment, where they are making a documentary

about the human digestive system. One pupil commented that they really enjoyed it because they believed it strengthened their computing skills and would like to see science in other lessons like Maths.

In Key Stage 2, pupils spoke positively about their teachers and how they make it fun and engaging. Year 4 commented on how the confidence of their teacher made them feel confidence and showed how much they enjoyed science. Year 5 spoke about how their investigations always vary and this helps add the 'mystery' concept and feel, believing that it challenged them to apply their learning to solve something new. In Year 6, pupils spoke about how they positively enjoyed representing their work in different ways. One pupil in particular believed it helped process their understanding on how fossils are made and used her work as an example to support retelling the steps. Year 3 pupils identified the different ways that they show their learning and believed it made it fun, especially when using drawings. Two children both said (agreeing with each other) that it was a comfortable way of showing what they had learnt and were able to use it to explain their concept of animal life cycles well. To summarise, pupils agree that a teacher's passion and varied teaching styles help develop a stronger enjoyment of learning the subject.

How could your teacher for science in our school improve the lessons and science experience for you?

Many of the pupils across all key stages felt that they could have more science lessons that were 'messier'. I asked the pupils if they could name any that were, and UKS2 pupils all made reference to a digestive system lesson in Year 4 where they got to experience the digestive system using tights and crushed-up food but were unable to reference any more. I asked why they wanted this; all made reference to wanting hands-on science. One child in Year 5 felt messy experiments were 'rare'. Pupils also wanted more control over these investigations rather than following instructions so they felt that they were thinking more about the scientific process of an investigation.

Some pupils spoke about the time being able to discuss answers to questions as being too short, and felt this should be extended so that they can use their peers' knowledge to build on learning and apply vocabulary.

In Upper Key Stage 2, pupils felt that they were not learning from their mistakes or misconceptions when identified in learning. They felt the questions asked were 'too basic' and wanted opportunities to stretch their learning, such as a broader range of questions to test their knowledge. Year 5 pupils referenced having a system like they do in Maths and Literacy. This suggests that the children, although being made aware of their progress through marking, want to be further challenged with their application of knowledge. Pupils in Upper Key Stage 2 also suggested having more one-to-one time with a teacher for support if something in their learning was marked as being incorrect, feeling that this would help their understanding.

What has been your favourite thing about Science?

All pupils asked made reference to being able to participate in experiments, with some referencing that it helps consolidate learning from the teacher and then being able to apply it. Pupils in Key Stage One said that it allowed them to find out new learning and Key Stage Two pupils echoed this, referring to it being able to answer given questions that they have been challenged to find out. Year 5 spoke enthusiastically about an activity in Year 5 were they just given a circuit with no power source and they

had to find one. Many knew it had to be an electrical source but how it looked they did not know! One child said, “It makes feel more in control of what we’re learning and it is much more useful than just the teacher telling me the answer,”

Some pupils referenced the extra-curricular opportunities as being enjoyable for Science. For example, Year 4 spoke enthusiastically about their poster and computing link, believing it allowed them a greater way of representing their learning as well as strengthening their other skills for other subjects (e.g. when asked they said ‘typing’). When asked to what link to science was enjoyable, they referenced the content.

Pupils in Year 6 referenced the opportunities of going further into their learning was enjoyable. They spoke positively about Charles Darwin and rather than just learning about who he was, they enjoyed learning about his work and its impact in other areas of science because it helped them understand the world more. When asked if they had similar experiences in other subjects, they said no.

Do you work on your own or in groups?

All pupils said that they worked in groups, with the size varying depending on their age. When asked if it was a positive, all pupils said yes with references to how it helps share and build on ideas and they can learn together.

The older the children got, the more independent opportunities in science were recognised. Teachers often spoken prior to this pupil voice that they do encourage children to carry out some scientific enquiries (e.g. classification) independently, and this was echoed by children from Key Stage 2. When asked if it was a positive, they believed it was because they were able to express their ideas in the way they wanted to (e.g. independent writing) but they wanted to carry out investigations on their own as sometimes they have disagreement about the roles that they will have in an investigation. Similarly in Key Stage 1, all children said that they wanted to do some science on their own because some people do not try other roles. One child in Year 1 referenced his experience in Reception, where they could make their own science lava lamp and they got to try doing everything.

What do you think you will do next in science?

Key Stage 1 pupils were asked if they knew what else they would be learning in Science this year but they did not know. Lower Key Stage 2 pupils believed their learning would be progressive, with Year 4 children reference topics such as the bones in the body and the parts of the mouth that they wanted to learn about because it would strengthen their knowledge and understanding of the human body. Upper Key Stage 2 pupils made reference to the content being at the back of their books (summative assessment sheets) but did not know how it worked and just read off of it.

I asked Upper Key Stage 2 pupils if they felt that their science learning had progressed throughout the school. They all agreed, making links to learning that they did in previous years to now (e.g. One child in Year 6 referenced life cycles from Key Stage 1 to evolution in Year 6).

What do you find hardest in Science lessons?

Key Stage 1 pupils believed that learning how to use apparatus was the hardest part. When asked what, they were unsure how to use things and felt that they were just given and not enough time to practise using them before doing an experiment, such as measuring cylinders. When asked why, they just felt it was rushed.

Lower Key Stage 2 pupils felt explanations given by the adults were too vague. One child in Year 3 felt that they just copy information and do not get to apply it, and one in Year 4 believed that they do not get the opportunity to use all vocabulary in context. When asked for solutions, Year 3 wanted more activities that use the vocabulary (e.g. questions) and Year 4 suggested either having the teacher come over and verbally ask questions to 'test' their knowledge (and fix misconceptions) and provide sentence starters (like stem sentence starters used in Maths and English).

Upper Key Stage 2 referenced deciding on roles, with some feeling that pupils do not share and this leads to arguments. When asked if any strategies were used, one pupil believed having roles set 'per term' would be useful and provide opportunities to share and experience different roles. One child also referenced the use of vocabulary as being a hard point, and wanted knowledge organisers used more to help them retain key language that they could use when asked to explain something.

Is there anything about Science that you don't like?

Key Stage One said they loved all their science lessons and experiences.

Lower Key Stage 2 felt recalling subject knowledge was tricky but felt the knowledge organisers were helping with this as they could reference it. They want these being used further.

Upper Key Stage 2 pupils were happy with their Science lessons and felt even the things that they found were enjoyable because they were able to progress their learning.

What makes a 'good' scientist at Hartwell?

I asked all pupils what they believed a Scientist was.

KS1	LKS2	UKS2
"Seeing new things,"	"Doing experiments,"	"Learning new knowledge and skills to help our planet work better,"
"Doing investigations to learn and help others,"	"People who never give up learning new things,"	"People who build on what has already been achieved to learn new ways of surviving,"
	"They go outdoors and learn about how the world works,"	"Men and women who work on projects to make our world a better place,"

I then led a discussion as to how this would look in our school and what would make a 'good' scientist at our school.

KS1	LKS2	UKS2	
Not being distracted.	Not giving up.	Hardworking.	Being confident.
Having fun.	Trying your best.	Showing curiosity.	Using learning from previous subjects to make links.
Trying your best.	Doing experiments.	Not giving up.	Team work.
Working hard.	Using background knowledge.	Always being positive.	
Not giving up.	Being motivated to learn new things.	Showing passion towards tasks.	

When asked if pupils believed they did any of these, all pupils in Key Stage 1 agreed they did 'some' (e.g. team work) but could not give examples. Some pupils in Lower and Upper Key Stage 2 believed that they showed them but because they were children, that it was "…part of the job of being a student" (as one child in Year 6 said).

Any other comments?

Key Stage 1 and Lower Key Stage 2 had nothing else to comment, nor did Year 5..

Pupils in Year 6 wanted to ask about whether they get an opportunity to prepare themselves for Science in Year 7. I asked them if they were aware of anything that other Year 6's have done and they were not able to give ideas. I asked them what they would like to know.

- Do we get to visit a Year 7 laboratory?
- Do we get to try some of the equipment that we will use in Year 7?
- What do we need to know before Year 7?

I said that I would speak to the Year 6 teacher and devise a plan to support them with this.

<u>Actions from pupil voice</u>

Action	Who will be involved?	PSQM link?
A policy-worded agreement as to when primary science should occur.	SM Report to governors & SLT. Given to teachers.	Vision & principles.
An agreed vision of what Science is.	SM & class teachers.	Vision & principles.
Ensure knowledge organisers are consistently used.	SM to discuss with JP. Inclusion in policy.	Substantive knowledge. Assessment.
Strengthen links between Science and Maths (STEM?)	SM to meet with AB to discuss plans going forward.	Cross-curricular links with Maths & Science.
Consider Science WOW experiences (monthly)	SM to look into concepts/ideas used by other schools, considering links as to whether it can develop disciplinary	Adding to teacher's knowledge. Assessment opportunities.

	knowledge. *Link to CPD in November 2021. CEIC?*	
Look at ways of writing/expressing scientifically.	SM – Concept Cartoons. SM to look for other strategies that can be used as formative assessment.	Formative Assessment
Speak in Key Stage meetings about time given when answering questions.	SM and teaching staff.	Vocabulary progression.
Plan links with literacy (e.g. books about scientists)	SM & SMc	Reading links.
Providing independent opportunities/planning investigations.	Key Stage meeting discussions.	Investigations.
Summative assessment – involving pupils	SM to look for summative assessment in Science opportunities. Key Stage meeting – involving pupils in summative assessment 'journey'	Assessment.
Apparatus pre-teach	SM to find disciplinary knowledge CPD for staff. Key stage meeting – link to WOW lessons?	Staff knowledge.
Look into stem sentence starters for science	SM to look into and consider.	Vocabulary.
Science investigation 'roles'.	Key Stage meeting discussions	Enquiry skills and types.
Create 'Hartwell Scientist' vision and principle poster.	SM to implement into policy and work with teaching staff about integration.	Vision & principles.
Y6 into Y7 transition.	SM and SMc discussion.	Transition.