Bring a parent to school the GSSfS way!

Our bug hotels!

Claire Davies reflects on how her school's involvement in the Great Science Share for Schools (GSSfS) and Primary Science Quality Mark (PSQM) turned the tables on science at Kingswood Parks Primary School

If you had visited my school three years ago, you would have wondered if science was taught at all. There was very little science in the school environment and it wasn't high profile. There were some weeks when science wasn't even taught in every year group; rather, it was an add-on, an afterthought.

Today it's a very different picture. Science is everywhere! It's by the entrance in our 'Bulbs for Schools' planters, it's the weather station on the roof, it's in the bug hotels in Foundation Stage, and it was all over our home learning platform during lockdown. Science is now a huge part of our everyday life, but it didn't change overnight.

I completed the PSQM two years ago. On completion, I had two goals: do more whole-school science events and get our parents involved! The Great Science Share was the perfect platform for us to bridge the gaps that had been highlighted during my time working towards our school's award. I finished my portfolio in early spring, which meant that I had a few months to organise the Great Science Share before the main campaign day in mid-June.

Science Challenges once a term

My mission was for children to see science not as something they just do at school, but something with which they engaged all the time. I wanted them to think of themselves *as* scientists and investigate their questions when they had them. I had read an article about creating environments at home where children feel safe and comfortable enough to investigate their questions without needing their parents to do it for them. The only way that I could see our children beginning to do this was to get their parents involved and so I started by having home-school challenges.

At Christmas, I sent the children home with a Science Challenge to complete as a family. It inspired families to carry out a range of investigations using Christmas candy canes. To support them, I attached pictures of possible investigations, such as putting different-coloured canes into different liquids to see what would happen and to investigate dissolving time too at different temperatures. From the 550 pupils in our school, 90 families took part.

At Easter, I set another Science Challenge and this time I left the challenge open-ended. I made a flyer with some pictures of various spring/Easter-themed investigations, but the parents were left to choose what they did. We asked them to use Twitter to share their work and had a variety of activities, ranging from children putting flowers into coloured water, to using Diet Coke and Mentos to create volcanic eruptions. This time, almost 200 families took part and sent work back to school.

Showcase of children's sticky knowledge

The Science Challenges were working well, but the children still weren't the ones asking questions and the parents

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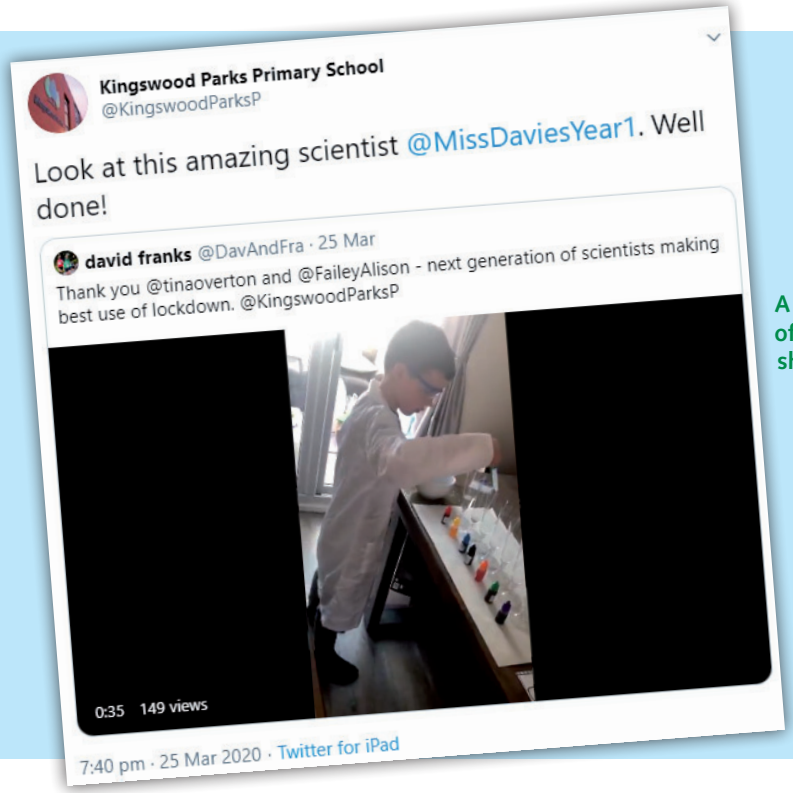


A festival of Twitter shares!

weren't allowing them (most of the time) to investigate by themselves. In my opinion, the children were being guided too much.

I discussed how to raise the profile of science at home and decided, along with the rest of the staff, that we would do a showcase to parents modelling how to engage children more in independent science learning.

175 (44%) parents attended and I spoke about using the questions that the children had generated during our lessons this year, modelling to parents how, as a school, we allow the children to investigate without giving them the answers. We had worked really hard to move away from science investigations that were 'WOW' lessons and wanted to ensure that children were gaining knowledge from investigations that we carried out. The children were now asking more meaningful questions, investigating these questions and explaining what they had found. Every year group was following this structure. I also decided that I wanted the children to lead these sessions – and thus our Great Science Share idea was born. Now we just needed to execute it!

Great Science Sharing

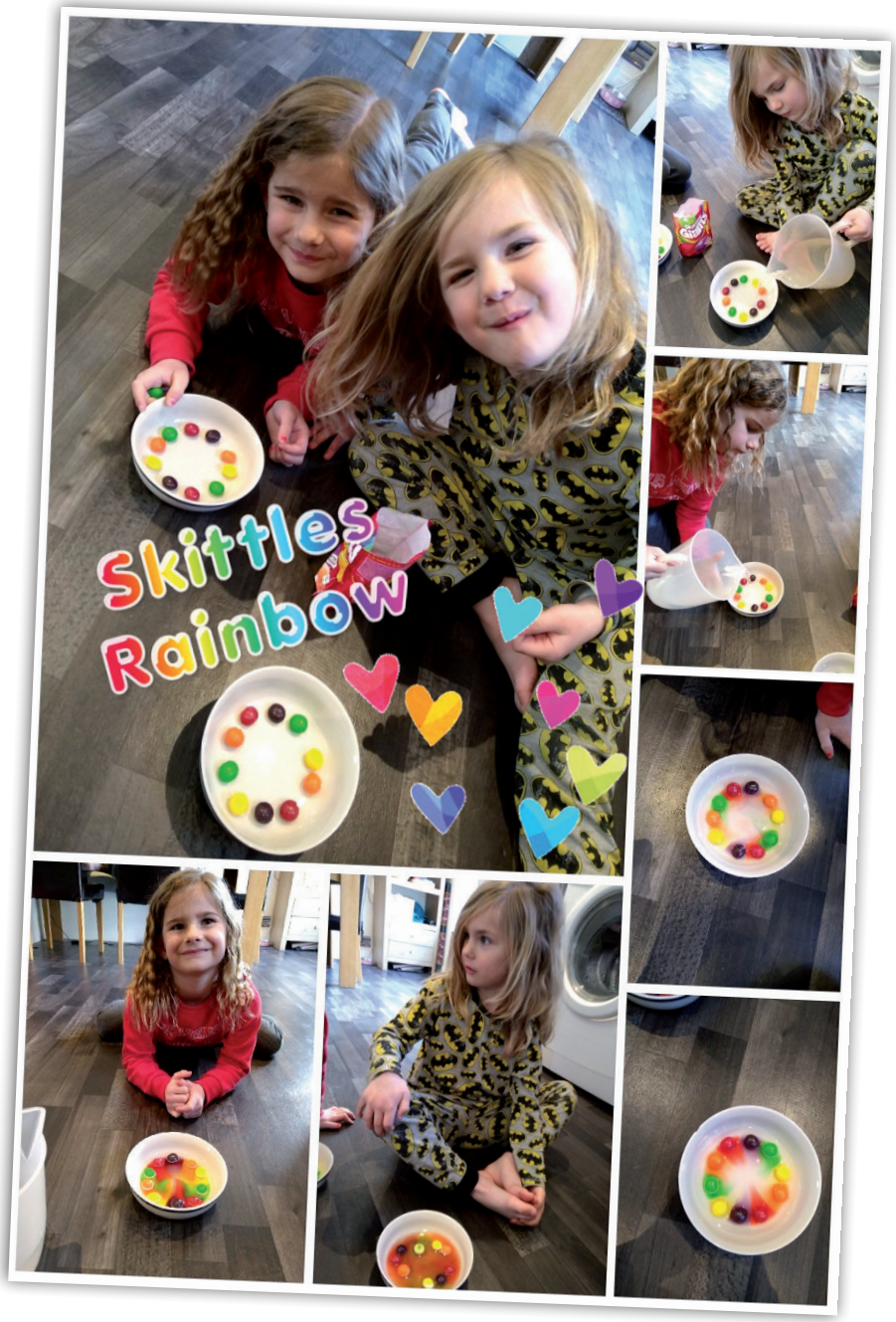
For our first Great Science Share, we took on the campaign's value of being more collaborative and invited the parents into school to take part in open lessons. This meant that the parents watched our lessons and supported their children with their work. We had some great feedback and they loved how practical the sessions were. They were also impressed with how we listened to the children's questions and how our lessons changed depending on what the children's interests were.

In the next Great Science Share, we wanted to develop the campaign value of being child-focused and having the children take more ownership over the questions they asked and investigated. The parents were invited in again but, this time, the teachers didn't lead the lessons. The children showed their parents what they had learned. In Year 6 (ages 10-11), they designed the activities and delivered them independently; in Year 1 (ages 5-6), the teachers asked the children to vote on their favourite activity that year, and then the children worked in groups with their parents and an adult. The children led the explanations.

Year 6 Great Science Share experience

In the autumn term, our topic was 'Animals, including humans', and in spring it had been 'Evolution and Inheritance'. The children had absolutely loved these topics and gained so much understanding through the investigations that we set up. They were really excited to share their knowledge with their parents. They came up with 5 of their favourite investigations from the year and thought about how they would teach their parents. They chose: making blood (researching the different parts of blood and making it with sweets and juice); playing a game based on the circulatory system (they became the blood travelling through the arteries and being oxidised); the evolutionary beak (based on Darwin's theory of evolution on the Galapagos Islands); a yeast experiment (investigating what effect sugar and water have on yeast); and then, for fun, they taught their parents how to make slime.

Year 6 Darwin investigation



How does the water temperature affect the Skittles colour change?

Across the school, each year group worked with their classes to share their science from the year with them. In Year 5 (ages 9-10), they looked at how to separate materials, Year 4 (ages 8-9) looked at chromatography, Year 3 (ages 7-8) investigated how light travels, Year 2 (ages 6-7) looked at floating and sinking and Year 1 (ages 5-6) worked with the children to find the best material for the Little Pigs' house. Finally, the Early Years Foundation Stage (EYFS) children planted seeds and made healthy sandwiches.

Parental impact

After each Challenge or Great Science Share we have asked the parents for their feedback. It's always been really important for me to see how effective these sessions were felt to be. After the first Great Science Share, our feedback focused on how lovely it was for them to see what the children were doing, their classroom routines, and they enjoyed spending time with their children. When the children led the Science Share, the parents' feedback was even more amazing. They commented on the children's knowledge of the subjects and were surprised at the standard at which the children were working. They also shared that it made them feel that science isn't boring! They loved how engaged their children were.

Parent responses to the GSSfS experience:

What did you enjoy?

- Having my child showing me the experiments and sharing her knowledge
- Getting to know what the children are learning and seeing them enjoying it too
- Watching my daughter participate in experiments
- Learning what my son is being taught
- The evolutionary beak – trying to pick up beans/pasta

What did you learn?

- That no colours can be seen in the pitch dark
- How the children put into practice theory-based knowledge
- How much my child's knowledge has developed this year
- That science is not boring!!
- That the children learn at a higher level than I expected
- If the birds don't have the correct beak size, they would starve and die

Building on success

For 2020, I had planned to spread our wings a bit further and share our science, not only with our parents but also with the other schools within our Multi-Academy Trust. I wanted to use our digital devices (iPads and ICT platform, *Just 2 Easy* (J2E)) to share what we were doing with children in the same year groups. Our original plan had been for the children to find an investigation that they enjoyed and film themselves carrying it out. Although this didn't happen due to COVID-19, something even more amazing happened instead!

We moved our teaching and learning onto J2E, a programme that we have used as a school for a number of years. We use this programme to teach, coding, animation, word skills, green screen, etc. The children are taught to use it from ages 3 to 11, so they have a good understanding of how it works. As we started to set our children

work from home, I began to create and gather science investigations that children could complete with their parents. They all went into a folder on J2E and this was shared with the parents.

Our Digital Great Science Share 2020 experience

- **Parents regularly shared the science that children had undertaken through videos and photos, using Twitter or on J2E.**
- **Each year group teacher offered their classes ideas of different investigations that they could do on the GSS day.**
- **Teachers offered live lessons to their children as part of home learning provision.**
- **Children engaged in daily tasks, working with their parents to investigate a question in which they were interested.**
- **Children presented their question and investigation to their class members via a live class science fair at the end of the week.**

Teachers reported how many videos and photographs of investigations were shared and how amazing they were. The children were able to speak about their findings confidently and had time to really focus on the results and conclusions.

Momentum and legacy

As a school, we've continued to engage with our families and children using social media and our ICT platform. It has helped that the staff at our school are as passionate about sharing their questions with the children as I am. We've seen so much benefit in linking our ICT to science, and facilities like the school weather station are now being more readily used by the whole school and there are links to the data about rainfall or wind speed that come in constantly, making science more meaningful and relevant. This has provided more links to maths, with graphs and research comparing weather in different countries.

Parental engagement is still something that we are working on as we return to school in September but, as a staff, we are more confident in engaging parents in different ways. If I were to summarise the aspects that mattered the most, I'd suggest setting termly Science Challenges for families to complete during the holidays, inviting parents in for Science Week or working towards a Science Fair to showcase work done with the children in lessons. Regularly sending home examples of work that the children are doing in science (we use *Marvellous Me*) has really helped the parents find out what the children are doing in lessons and, in most cases, they have continued investigations at home, after the lessons. Finally, keeping the parents in the loop has really helped us to improve engagement, our school Twitter is used by all staff and parents to share our science, and we also have termly science newsletters that celebrate work that the children have done at school and at home.

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