



Figure 1 Child-led scientific investigations are a key feature of the campaign

**No substantial differences ...**

**that's great!**

**Lynne Bianchi describes the impact of the Great Science Share for Schools**



**'No substantial differences'**, he said leaving me feeling slightly despondent, until I realised the implications of this conclusion – a moment of realisation – no substantial differences between boys and girls or between the disadvantaged and their more advantaged peers was a really positive outcome for the 2019 Great Science Share for Schools (GSSfS)!

This annual campaign has already engaged over 100,000 pupils since its start in 2016. With 2019 seeing a record-breaking 63,614 pupils registered across 483 events in 11 countries, the forecast for 2020 is looking positive. Events are taking place in early-years' settings, primary and secondary schools, STEM organisations, universities, outdoor

spaces, hospital schools and more. The campaign focuses on children of primary age (5–11) and key stage 3 (11–14) sharing *their* scientific questions and investigations with new audiences; it seems to be this focus on them sharing their interests that resonates with so many.

Set up by SEERIH at the University of Manchester in 2016, the campaign will celebrate its fifth birthday in 2020. The date is set for 16 June, but can be nudged to fit in with timings that better suit participants' timetables. The values underpinning the GSSfS are that it remains child-focused, inclusive and non-competitive, with a collaborative thread through events taking place on and around the campaign date. Free registration means there is

access to all, with no restriction on the size or scale of involvement. It has grown organically with the support of networks and sponsors, enabling its presence to develop via social media, newsletters and face-to-face communications, with the core message of it's never too soon to get involved!

It would be easy to get caught up in the excitement of all this, but it is important that we focus on the objectives of the campaign. It arose from my passion to raise the profile of primary science at a time when our third core subject in England was receiving less recognition than it deserved within the curriculum offer. I aimed to shed light on a crucial part of a child's learning journey. I built

Key words: ■ GSSfS ■ Gender ■ Disadvantage gap ■ Children's questions



**Figure 2** Being non-competitive and inclusive, GSSfS embraces all pupils

the campaign with mass engagement as a target, but not at the expense of quality science-learning experiences. I saw it as means by which teachers could come together to celebrate our subject, while also feeding and developing it by sharing practice, offering guidance and support, and opening up collaborations to enhance learning opportunities for primary and lower-secondary school children.

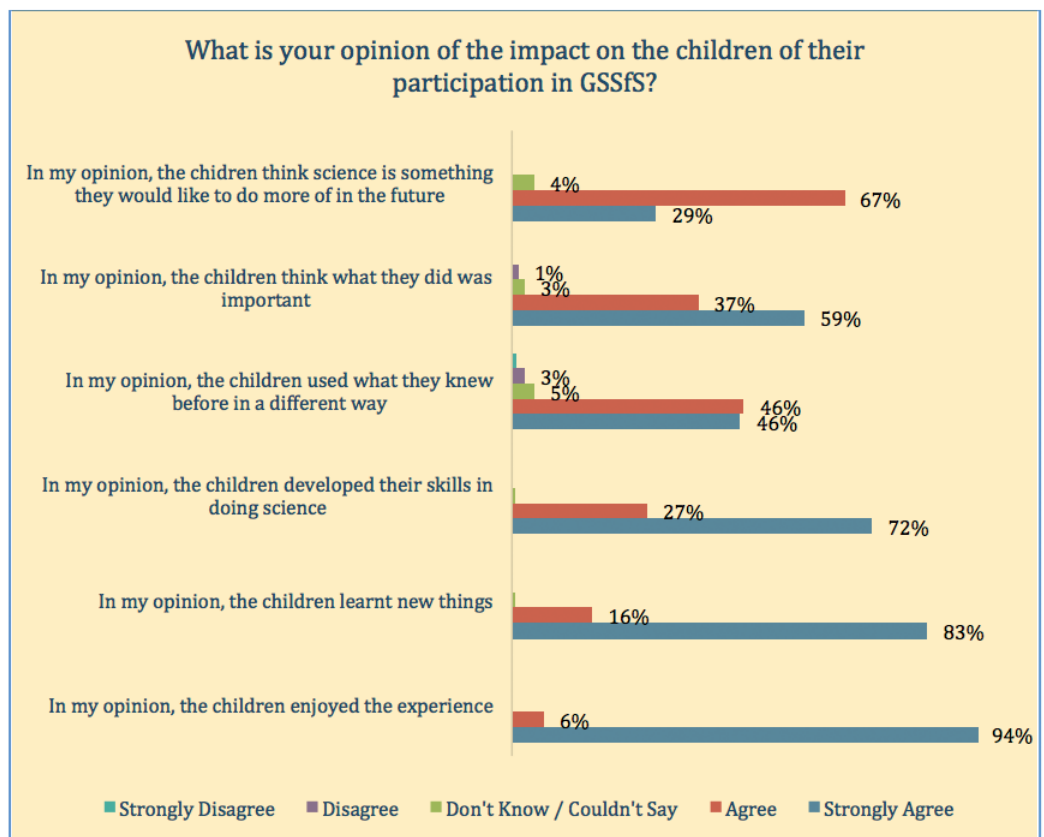
**What has five years of activity achieved?**

Annual evaluation reports using teacher survey, interview and pupil-voice data show positive outcomes for pupils (LookOut, 2017, 2018, 2019). The 2019 report shows:

● 86% of respondees (32% response rate) stated that the

investigations that took place as part of the GSSfS were more child-led than those regularly carried out in school. 47% said that these were ‘a great deal more’ child-led than usual.

● 99% of respondees stated that the children learnt new things, with the same number reporting children developed their skills in doing science through their activity linked to GSSfS.



**Figure 3** External evaluation results (LookOut, 2019)

● **94% of respondees agreed GSSfS increased the profile of science in school.**

This is all very pleasing, but what we are finding even more interesting is where we have results showing *no substantial differences*. These outcomes refer to a separate evaluation, undertaken by ImpactEd (2019) over the summer months of the 2018–2019 academic year. The key focus of this was on the non-cognitive outcomes that align with the GSSfS's core aims, paying particular attention to outcomes with predictive validity, that is those that have been shown to be associated with improvements in long-term outcomes such as wellbeing, academic achievement and employment destinations. Our team was interested to explore this, as we acknowledge that, alongside academic achievement, there is evidence that skills such as metacognition, resilience and self-efficacy can be particularly important in closing disadvantage gaps.

**Closing disadvantage gaps**

Each year the campaign has seen a rise in take-up by schools in areas of high social disadvantage, and in 2019 we saw 47% of events taking place in such areas. We wanted to consider more closely the impact of the GSSfS on pupil learning and whether we could see any trends in impact for different groups of learners. A small sample of seven schools participating in the GSSfS volunteered to test this approach, involving 373 pupils. Three outcome measures were selected, metacognition, academic resilience and openness, with children in years 5 and 6 (ages 9–11) undertaking a short, psychometrically validated online questionnaire soon after completing their GSSfS event.

Although this design does not allow

us to make strong causal claims about the impact of the GSSfS, or track how it might influence the progress of individuals over time, it does allow us to put the results for GSSfS pupils in context and to see how their levels of metacognition, resilience and openness compare to similar cohorts.

**What did we find?**

A comparison of the GSSfS pupils with a group drawn from ImpactEd's 25,000 response database showed:

● **Higher levels of openness and resilience for GSSfS pupils, and slightly lower levels of metacognition. These results were not statistically significant, so we cannot say for certain that the higher scores were necessarily due to the GSSfS alone, but they do provide some promising trends.**

● **The differences between the groups were much larger when we looked specifically at mathematical problem solving and creativity aspects of openness, and the academic persistence elements of resilience. Here, GSSfS pupils scored substantially higher than the comparison group. These are particularly promising findings that we are looking to investigate more in the future.**

● **No substantial differences between boys and girls were found on the three outcomes.**

● **No substantial differences between children from the most disadvantaged postcodes and others were found on the three outcomes.**

**Should we be pleased?**

I believe yes: going beyond natural biases, these evaluation measures are starting to show that GSSfS is impacting on areas of children's learning that tend to reflect achievement gaps for boys and girls and children from disadvantaged areas. So the fact that different groups all

showed results that were broadly in line with each other helps to support the GSSfS aims of inclusivity and equality, and makes us want to dig further to understand whether this is something being achieved at scale.

When I took that call and heard *no substantial differences*, what I really heard was that GSSfS is actually starting to achieve things that are meaningful to children's learning, not just in science, but more generally. The fact that the profile of science is also raised is a bonus. With more and more STEM organisations and different types of schools becoming involved and sharing the word, we see take-up reaching beyond our shores to Brazil, Nepal, India, Nigeria and hopefully Australia. The value of collaboration is also ringing true – a bonus!

**What are you waiting for?**

It is time to get involved or, if you are already, reach out and support someone else to join in

- Register for free at [www.greatscienceshare.org](http://www.greatscienceshare.org)
- Save the date of 16 June 2020.
- Download free resources that highlight 2020's new sustainability theme: [www.greatscienceshare.org/2020-sustain](http://www.greatscienceshare.org/2020-sustain)

**Acknowledgements**

Thanks to our sponsors and advocates including the University of Manchester, ASE, BASF, Manchester City Council, Practical Action, Siemens and ZenEducate.

**References**

ImpactEd (2019) *Great Science Share for Schools' evaluation report: understanding the impact of inspiring young people through science*. Access on request via [fascinate@manchester.ac.uk](mailto:fascinate@manchester.ac.uk)

LookOut (2017, 2018, 2019) *Great Science Share for Schools evaluation report*. Access on request via [fascinate@manchester.ac.uk](mailto:fascinate@manchester.ac.uk)

**Tell your story**

Would you like to tell your impact story in a special issue of this journal?

We are looking for teachers or organisations from across the UK, or internationally, who would like to write an article for a Great Science Share for Schools special issue of *Primary Science* about the nature and impact of their involvement. Email [lynne.bianchi@manchester.ac.uk](mailto:lynne.bianchi@manchester.ac.uk) as soon as possible if you are interested. Copy deadline: **Monday 14 September 2020**.

**Dr Lynne Bianchi** is the founder of the Great Science Share for Schools' campaign and is the Director of the Science & Engineering Education Research and Innovation Hub (SEERIH) at the University of Manchester. Email: [greatscishare@manchester.ac.uk](mailto:greatscishare@manchester.ac.uk)