



# Building bridges with the GSSfS

Angharad Pass and James Dunn explain how a collaboration on a virtual GSSfS encouraged authentic primary to secondary transition

Mr Dunn's Stomp Rocket Challenge

**A**fter hosting Great Science Shares in Leeds for two years, which welcomed 10 schools to Tranmere Park Primary School, we knew that the 2020 Great Science Share for Schools (GSSfS) was always going to be a new challenge. Our experience had been to work with our local cluster of schools to develop Great Science Share events that created meaningful links between primary and secondary schools in our area and supported the transition of pupils as they moved from primary school to high school.

Usually we would meet as the spring term started to discuss ideas and to begin our shared planning for the GSSfS. This year was just the same and two of the local high schools in the cluster were very keen to be involved. We had already started thinking about how the event, or possibly events, could be run. This was all before the COVID-19 virus hit and most schools shut down for everyone except key workers' and vulnerable children.

## A changing world

Once we began settling into our new version of 'normal', we took up the baton of planning a GSSfS from where we left off. We realised that it wouldn't look like the previous years' events, which had been based on a 'marketplace' model where children had a table in the school hall with practical activities, posters and science books to share with their contemporaries. This

year was going to be different, *very different*.

We were determined to continue our cluster's shared focus on developing working scientifically vocabulary, which included building understanding of the assessment of risk during science practical activities and making links between junior (7-11 years) and lower secondary (11-14 years) science learning. We also felt strongly that the GSSfS theme of the Global Sustainability Development Goals (SDGs) was a really important message to be sharing with our pupils, so we began planning how the two could come together in a *virtual* environment – a completely new challenge!

## Bridging the gap

From research done previously on 'bridging work' (Braund, 2016), it is clear that, with primary and secondary schools working together, the transition for students becomes smoother, with more continuity and logical progression. So, we set about planning a series of investigations, linked to the weekly themes of the Great Science Share 2020, which would engage the primary pupils, build on their prior experiences and incorporate some of the cluster's key focuses.

Each week, to support the GSSfS weekly themes, we published a guide for the pupils with key questions, weblinks and suggested resources to help support parents working with their

children, and to give them a focus and direction. Alongside these guides, James Dunn, Science Core Curriculum Lead at Guiseley School, filmed a series of practical demonstrations to be shared with the primary pupils. Linking with the weekly theme of the Royal Astronomical Society's (RAS) 200th birthday, he recorded a Stomp Rocket investigation and a Coke and Mentos fountain and, linked to the World Oceans Day theme, a diffusion in water experiment.

Alongside the weekly guides and videos, we decided that a variety of resources to support the learning would be beneficial. With some pupils learning at home and some in school, it needed to be adaptable and to use resources that were simple to access, such as household plastics, 'kitchen sink' items like food colouring, and with a variety of methods to suit the families planning home learning. For the Stomp Rocket investigation, we included the video, a template and the opportunity to record results, analyse data and try it at home, with instructions on how to make your own Stomp Rocket using easily accessible and recycled items. We included 'Challenge' ideas to extend the learning, including a follow-up activity using Skittles to support the learning in the diffusion investigation and links to websites including ScienceSparks (see cited resources below) to support both pupils and parents.

In the videos, there was a strong focus on key scientific vocabulary identified

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Family teamwork – enjoying the Stomp Rocket Challenge



Diffusion, inspired by Mr Dunn's video

as important for pupils moving up to high school, such as independent and dependent variables, discussions on safety and risk and considerations in planning and evaluating investigations. These all continued to build on our work with the cluster of schools.

The response from the videos and supporting resources was unexpected. It showed really engaged children being supported by their families, enjoying science learning together. We received videos, photos, pieces of written work, and some children had extended their learning by developing their own models or planning and carrying out their own

investigations. We found that recorded demonstrations by someone with whom they had links, with additional supporting resources to help extend and inspire, was a really positive way to engage learners and they responded to it by sharing their learning back.

### #AskAHighSchoolScienceTeacher

We also developed the hashtag, #AskAHighSchoolScienceTeacher and, alongside a free online questionnaire, used it in conjunction with our online learning platform to give pupils the opportunity to ask a teacher from the high school a question. This could be about anything, from what learning

science was like when you moved up from primary, to any perplexing scientific question to which they wanted to know the answer. The opportunity to ask questions, and to get a response, helped pupils to feel more comfortable with the idea of moving to high school and build rapport and dialogue with the local high school teachers, and provided the opportunity to take part in a fun, shared event. The questions received ranged from those about the practical work you did at high school, to complex (for primary school) scientific phenomena and even more existential questions linked to evolution and the Big Bang!

### Education for sustainability

With sustainability and the SDGs as a focus, we shared many fantastic resources with the pupils, including Practical Action Schools STEM Challenges and TEDEd Earth School, and we used EncounterEdu to give further 'real-life' perspectives on many of the global issues. The science learning that was achieved by the children was often carefully considered, thinking about real-world problems and using sustainability to investigate and create. There were examples of children exploring the impact of climate change on the oceans, and also recycling and reusing to create bird feeders and other garden objects as part of the Dawn Chorus weekly theme.

Having more focus on sustainability during the GSSfS has prompted an audit on our current curriculum and how we can make sure that the SDGs have a stronger focus to ensure that our pupils have a good understanding of the problems faced by much of the world, particularly the Global South. This is something that we are embracing, as we feel that this is an important part of becoming an active global citizen for our pupils. Although the National Curriculum for England doesn't have a strong focus on education for

## A high school teacher's perspective

The feedback I've received from the primary students relating to the investigations we've posted has really encouraged me to strengthen the links with local schools even further, and to engage with more of the pupils.

Videos like Elliot's homemade stomp rocket inspired by my Stomp Rocket investigation or Ben's Skittle chromatography experiment inspired by my diffusion investigation, have been really motivating to see. During the time in lockdown, when it was all too easy to look inward, we have been able to both look outward and grow. I'm looking forward even more to the new cohort of Year 6 [age 11] moving into my school in September.

I'm eager to discover the depths of understanding of our new shared vocabulary as pupils make the transition to secondary school, and I can see that primary pupils already gain a good understanding of scientific vocabulary that will transfer and progress as they move to high school. We have a good base to develop from.

#AskAHighSchoolScienceTeacher was a really enjoyable experience and responding

to the science questions that primary students were keen to know the answers to was fun. They included questions such as 'Why do we have earwax?', 'When did time start?', 'Why is the sky blue?'. These highlighted the current knowledge, understanding and curiosity of primary students and will enable my team of science teachers in high school to smooth the transition into the high school level of understanding.

Some really put me on the spot, but what a great experience! As secondary practitioners, we sometimes forget the fundamentals of science, the questioning of the world around us. I felt enthused by their curiosity to ask these questions, which are just as important as questions from great scientists of the past who have helped shape our understanding of the universe going forward. The future is bright, these young scientists can use that innate curiosity, shaped by our shared, finely honed best practice, to become problem-solving scientists of the future who can solve our sustainable development issues.





**#AskAHighSchoolScienceTeacher questions from the children**

sustainability, as discussed in Science Education and the UN Sustainable Development Goals (Lengthorn, 2018), 'That's not to say that we cannot or should not find ways to build education for sustainable development into our classroom practice. Indeed, we have a responsibility to future generations to do so'.

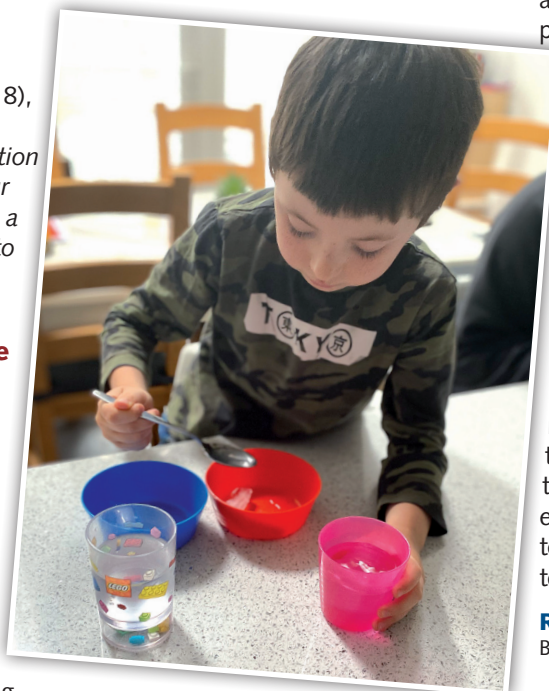
We agree. We do!

**The campaign day – 16th June 2020**

With the pandemic still ongoing, we wanted to create more of a sense of school community, even though we couldn't be physically close, so we promoted and undertook investigations with our key worker groups and the returning year groups as well as sharing the resources and activities with our families learning from home. Creating rockets was a really popular activity, as was investigating craters, also linked to the RAS theme. We wanted to ensure parity between the home learners and children in school, give them an opportunity to share the learning that they were doing, wherever they were doing it, and this was a really positive way to do this.

We took part in the online lessons on the day, sending in questions to some of the live lessons, including those provided by Farmer Time and SEERC where the children enjoyed speaking to Farmer Tom and making O-glidlers, as well as many of the other sessions.

**Considering real-life issues – recycled planters**



**Investigating the properties of ice during an online lesson**

**What did we learn?**

- 1) We are adaptable – schools are in a great position to support their learners, whatever the context.
- 2) From the collaboration between primary and high school, we discovered that children continue to be enthusiastic and engaged with science, even when they are moving up to a new setting with different expectations, and that they can be the inspiration for teachers to reflect on their own practice.
- 3) Having key themes throughout the GSSfS both during the themed weeks and the key focuses, for the cluster, of transition, vocabulary progression and managing risk in investigations, gave the event cohesiveness. Everyone was working to the same end goal and it also helped to direct the scientific learning focus of the pupils.

We strengthened the bond between our local primary and high schools, working together with renewed focus and determination to support the students to be curious and creative in their science learning as a community.

**Next time...**

For our GSSfS event next year, whatever form it takes, we want to build on the collaboration of this year's event, developing the transitional links further by recruiting STEM Buddies from the secondary students to support the event, and encouraging them to produce their own demonstration videos for the junior pupils. The opportunity for children to ask questions of the scientists and teachers around them was really powerful, so we hope to do this as

a face-to-face event next year, if possible and, if not, we will adapt again and will make it happen. We want to continue our supportive and collaborative local community and build on what we have learned from this year, continuing to work together because, it is true, together we are stronger!

If you haven't had the opportunity to be part of the Great Science Share for Schools yet, we would definitely recommend it. Getting colleagues and the local education community involved together has been so rewarding; everyone should have the opportunity to get involved, young people and teachers.

**References**

Braund, M. (2016) 'Oh no, not this again! Improving continuity and progression from primary to secondary science', *School Science Review*, **98**, (362), 19–26

Lengthorn, L. (2019) 'Science Education and the UN Sustainable Development Goals', *Education in Science*, (274)

**Cited resources**

- <https://sciencesparks.com>
- <https://practicalaction.org/schools/>
- <https://ed.ted.com/earth-school>
- <https://encounteredu.com/steam-activities>

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