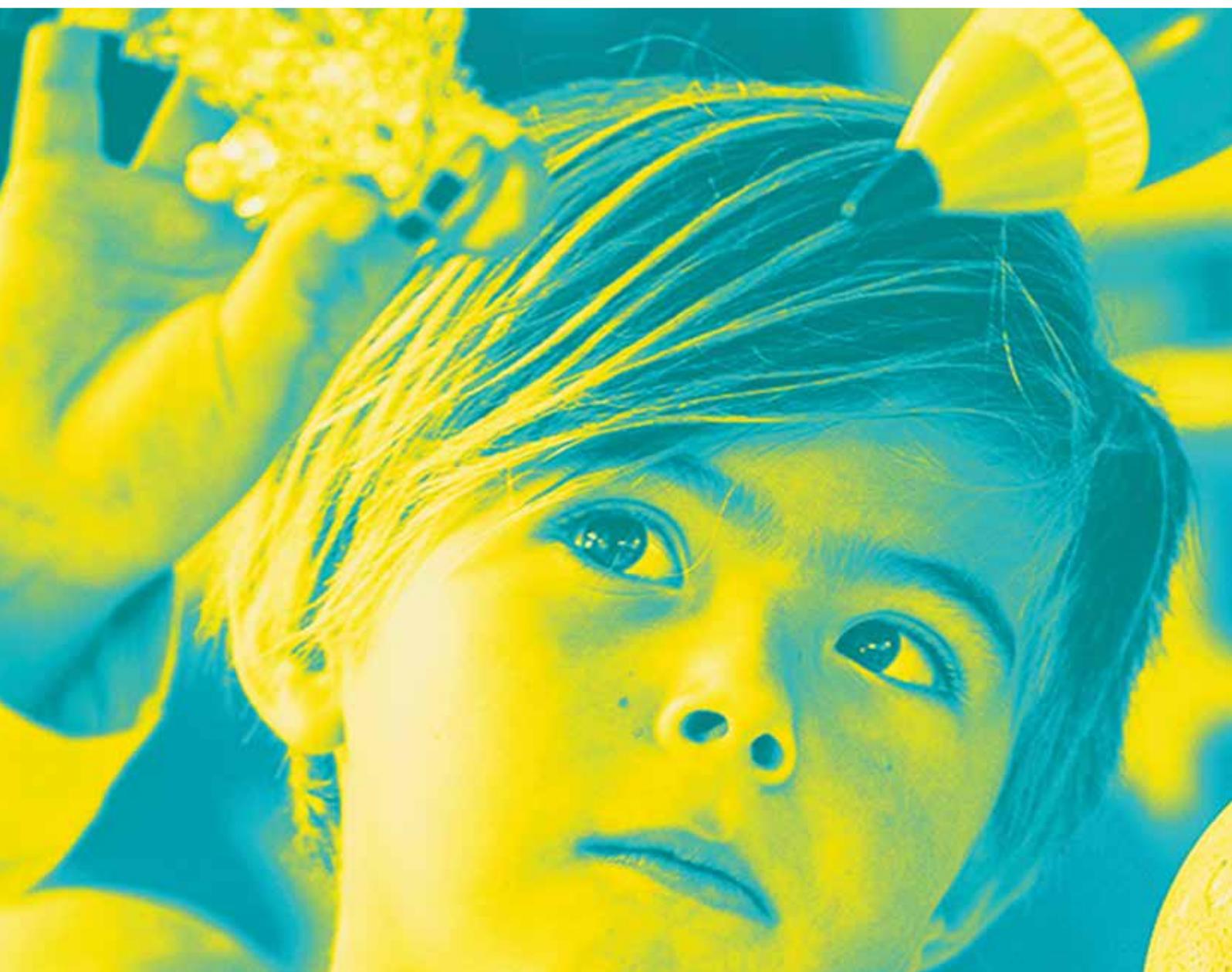


Great
Science
Share
for SCHOOLS

The ABC guide to running *great* events





www.greatscienceshare.org

@GreatSciShare #GreatSciShare #AskAQuestion

The ABC guide to running *great* events

A	What is the Great Science Share for Schools?	4
B	What are the benefits of taking part?	5
C	How is a GSSfS satellite event special?	6
D	What counts as a satellite event?	7
E	Why are children's scientific questions so important?	9
F	What are <i>great</i> science questions like?	11
G	How can we share our GSSfS event with others?	13
	Appendix A: Guide to investigating scientific questions	15
	Appendix B: Checklist for Satellite Events	17
	Appendix C: Sample Press Release	19

What is the Great Science Share for Schools?

GSSfS is a national campaign to inspire young people with science and engineering. It:

- engages young people in communicating their scientific questions and investigations with new audiences
- improves teacher confidence in teaching children to work scientifically
- raises the profile and value of school science improving children's science capital.

Since its launch in 2016, the campaign has reached over 50,000 young people and engaged a wide range of STEM organisations, community partners and families. By promoting child-centred learning in science the campaign provides a prime opportunity for young people to communicate their scientific questions and investigations to new audiences – in their own words and ways. This approach focuses on children engaging personally in the scientific processes by working scientifically on questions that matter to them, thereby raising aspirations towards careers in science and engineering.

Children can choose to either share work that they have already done in class, or at home, or within other STEM schemes and projects. Ultimately, however, **GSSfS is about children communicating something that they have been investigating especially for the share event, which starts with a scientific question that *they* are interested in.** They can communicate their investigation and learning in any way they choose, typically this is as a table-top, hands-on activity that they showcase to other people and through posters. Cross-curricular links are embraced, with computer science, engineering, arts and humanities offering rich opportunities to support children to explore their questions and share them with others.



B What are the benefits of taking part?

There are many advantages to being part of the Great Science Share for Schools campaign. The benefits to your school, teachers and young people extend beyond the curriculum and support the development of children’s science capital, community partnerships with parents/carers and local businesses.

Importantly, it supports teachers to dedicate time to allow children to communicate **what they know about science**, developing **what they think science is** and **sharing their experiences together**. By inviting scientists and engineers from a wide range of careers into school, whether in person or virtually through careful use of social media, their **connections with science beyond the school grounds** stimulates a range of opportunities to showcase where science happens in our everyday.

	Features	Advantages	Benefits
Children	<p>Children asking and exploring their own scientific questions in class or at home</p> <p>Children talking about demonstrating parts of their investigation to others at an ‘event’ (e.g. an assembly, school science fair, science day, through displays and video)</p>	<p>Children are boosted in their enjoyment for learning science by working scientifically</p> <p>Children take more interest in science by asking and investigating</p> <p>Children communicate their science questions and ideas with peers, family and people outside their immediate class</p>	<p>Improved family engagement in science, raising Science Capital</p> <p>Improved children’s attitudes and experience of science – they see science as something ‘they can and want to do’</p> <p>Improved children’s identity with science in their world/ community, the scientists and engineers who work near them, raising aspirations to careers in science</p>
Teachers	<p>Teachers working with colleagues to develop confidence in teaching working scientifically</p> <p>Teachers working across schools to share professional experiences and enrich children’s experience to communicate science</p> <p>Teachers making connections with scientists and engineers in their school community to raise awareness of science in our lives</p>	<p>Teachers address a core part of the National Curriculum requirements for Key Stage 1 and 2</p> <p>Teachers learn from colleagues by seeing and talking about how science is taught and learnt in other schools</p> <p>Teachers develop knowledge and sustainable partnerships with STEM professionals in their locality</p>	<p>Learning across the curriculum increasingly focuses on child-centred approaches</p> <p>More time is dedicated to science within the school year, capitalising on cross-curricular opportunities</p> <p>School ethos improves as teachers are retained, and recruited through a broad offer of innovative teaching and learning developments</p>

How is a GSSfS satellite event special?

A satellite event is any registered Great Science Share for Schools event that embraces the Great Science Share for Schools ethos.

Register at www.greatscienceshare.org

1. GSSfS events are for young people to communicate science to new audiences

We believe that GSSfS is about placing children in the driving seat to share their own scientific questions and demonstrate short practical investigations to each other. It's not about children attending an event run by adults and listening to the adults tell the children about science.

2. GSSfS are inclusive and non-competitive

We believe that all children can participate in a GSSfS event, and feel safe and respected. It is about celebrating wherever a child is at on their scientific learning journey, embracing their interests across science, technology, engineering and maths.

3. GSSfS crosses boundaries and promotes collaboration

We believe that the campaign provides chance to invite people and groups into the science learning process – be that children from other schools, teachers from other subject areas (e.g. music, art, humanities, PE etc.); or community groups, STEM educators, industry, colleges and universities.

Who is the campaign for?

To date most children involved in the Great Science Share for Schools have been primary and Key Stage 3 pupils (5-14 years).

If you're working with a different age group you're welcome to be involved by maintaining the ethos of the campaign .

D What counts as a satellite event?

All Great Science Share for School events taking place on the campaign day, or around the same time, that have been registered with the campaign team (www.greatscienceshare.org) are satellite events. They can be run by anyone interested in science education. In general they

- can be any size (ranging from a STEM club, a class, a Key Stage science day, to a Science Fair, bigger events at venue such as universities, colleges or even football stadiums!)
- take around 2 hours in an afternoon, but can be longer if you wish
- usually involve primary pupils and secondary pupils in the first couple of years of high school
- have invited guests, including VIPs, parents/carers
- welcome involvement from STEM ambassadors from industry, not forgetting school governors and family who are scientists and engineers
- have lots of table tops with children's scientific investigations being demonstrated
- happen in two-halves: the first half with one group of children communicating and the others roaming the event, and the other half switching so each child has an experience of both roles.

Follow these links to:

- **GSSfs PowerPoint** that you can use to inform teachers and groups what a Great Science Share for Schools event is
- **GSSfs Films** showcasing Great Science Shares in previous years

A checklist of how to plan for a Great Science Share for Schools event can be found in Appendix B. This table provides you with some useful information as to how you can get involved and what support you can gain.

Roles and responsibilities of a satellite organiser

- Register your event online at www.greatscienceshare.org
- Find a buddy to work with (in school, in another school, a parent or governor) if you think that'll be helpful
- Decide whether your event will be in class, across the school, with other schools or if you will attend an event hosted by someone else
- Download and use the branding material, e.g. the logos, information guides and certificates
- Publicise the campaign using school news streams, social media and through local press
- Complete a short impact questionnaire after the event

How GSSfs headquarters support you

- Offer information and regular updates via website and email
- Answer any questions you have via greatscishare@manchester.ac.uk
- Host resources on our website to help you and the children get ideas and see what's happened before
- Send you promotional materials to use before your event
- Signpost you to other primary science organisations, free resources and projects
- Provide you with a Certificate of Engagement each year you're involved

Important features of a satellite event

Children take the lead as much as possible

From the asking of their own scientific questions to investigating them, there are other ways they can support in a GSSfS event. There are lots of opportunities for children to plan and create their own Great Science Share for Schools. How about creating a pupil GSSfS committee to organise and lead the day? There are a myriad of jobs that the children could take on during the day itself: from roadies, to front of house, to science communicators. Lots of opportunities for writing will arise from planning - press releases, invitations, programmes, certificates, awards and thank you letters. Other ideas are: children building their own media campaign around their event too – creating blogs, tweets, videos and reports - widening the reach of their share even further.

Cross curricular links to apply literacy and oracy skills can be capitalised on – make the most of linking the curriculum opportunities together.

Adults encourage and listen

An audience is essential to any GSSfS event. Children gain so many skills when they have interested people to communicate with. It's good to invite guests such as children/teachers from other classes or schools, parents, STEM Ambassadors, local dignitaries such as the mayor, community or education leaders from local schools, colleges and universities.

Brief your guests before the big day about the nature of the event and their role within it. Adults are invited to engage with the children, to listen to them, ask questions and encourage them by talking with them about their ideas.

Inviting scientists and engineers, or people in careers that support science e.g. lawyers, catering, financiers etc. helps children build an association with where science is in their community. Of course, careers that are underpinned by science, such as florists, nurses, vets, pharmacists, hair dressers, grocers etc. also provide valuable opportunity make connections.

Such people are great for commending children for their endeavours and attitude to learning and sharing their science. A short 2-3 minute talk is useful about their career and how they came to do what they do – be careful not to have your GSSfS event taken over by lengthy speeches or shows from adults – the children's questions and their voices should be loudest and heard for the longest at your satellite event.

Investigations are engaging

Encourage the children to practice sharing their science with other audiences before their big day, so that they are confident and able to handle questions about their learning. Remind the children to consider that their GSSfS question and investigation is best when it is:

Repeatable - All activities need to be done repeatedly for short periods of time. As such you need to be prepared for multiple goes/visits to your investigation.

Well-explained – Their explanations need to be understood by people who may not have any experience of that area of science. They will be talking to both adults and children.

Novel – The Great Science Share for Schools is a celebration of wonderings, questions and scientific thinking. How will you make your activity stand out from the crowd? How engaging is it?

E Why are children's scientific questions so important?

Children are innately curious and we need them to stay that way if we are to thrive in an ever-changing, technological world. A central aim of primary science education is to nurture children so that they become independent, self-motivated scientists. An essential part of this is giving children opportunities to take the lead in their own learning and ask questions that they are interested in and wonder about.

It's understandable that we worry about letting go and allowing children to make decisions about what and how they investigate. We are challenged with time and resources in most scenarios - however, it shouldn't be scary if we manage it well. Encouraging children to ask their own scientific questions and investigate them can be done to varying degrees, at a pace that is appropriate for your children and you.

Working scientifically is a core part of the English National Curriculum for primary and secondary schools, and encourages teaching that enables children to take increased ownership of the scientific questions they ask and investigate. By doing so they build up confidence in themselves and in their ability to think as a scientist. The GSSfS campaign supports teachers to provide regular opportunities for children to scientific questions and to choose the best way to investigate it.

Do we concentrate better indoors or outdoors?

Is there a pattern between how fast someone runs and their leg length?

Does the type of surface affect how fast my wind-up toy travels?

How does the size of the balloon rocket affect the time it takes to travel along the string?

At what temperature do spring onions grow the tallest?

Which mixture makes bubbles last longest?

Thoughts on confidently asking scientific questions

Consider which approach you may take to support children to be part of a Great Science Share for Schools.

Taking part

Teachers set the topic and the scientific question to be investigated. They demonstrate how to investigate the question, modelling the choice from the 5 enquiry types. Children receive guidance and support to carry out the investigation, recording what they find and drawing conclusions.

Taking ownership

Teachers set the topic and general theme for the investigation. The children consider scientific questions they could ask. They are supported to improve their questions and identify the type of investigation it is. They can choose the resources they use and the way they record their findings. Teachers model specific skills, such as graphing to improve the quality of the investigation.

Taking the lead

Children describe the questions they are interested in and work to improve these questions. They identify the investigation type and plan how to go about their enquiry. They choose their own resources and ways to record findings. The teacher acts as a facilitator, supporting the children to be as independent as possible.



F What are *great* science share questions like?

GSSfS questions are those that the children have been curious about and really want to find the answer to. They are questions that they find novel and interesting and benefit from developing and improving. Work with the children to find out their ideas and discuss how they can become great scientific questions.

The table below shows a few questions that children have asked, with some thoughts on how they could be even better for a scientific practical investigation.

The original question	Thoughts about the question...	An even better question could be...
What is static electricity?	This may look like a straight forward question, however it is quite complex question as it requires a high-level answer that is often too complex for younger children to give. They could of course explore static electricity through practical observation, seeing the effects of static electricity.	Does the number of rubs of a balloon on my head affect how many objects can be picked up?
Which is the best grass seed?	The word 'best' is general and being clearer about what you mean by 'best' is important. Discuss with the children how to refine the question to identify what would make grass seed 'best'. This would lead them to thinking about which variables they could investigate.	Which grass seed germinates the fastest? Which grass seed produces the greenest grass? Which grass seed grows into the strongest plants?
How does size and shape of a balloon rocket affect the time it takes to travel along the string?	This question has two independent variables – size and shape. An independent variable is something that's not affected by something else. It is often better to choose just one independent variable at a time within a question so that you can really see what effect it itself has.	How does the size of the balloon rocket affect the time it takes to travel along the string?

What if I don't know the answer?

It's normal that teachers can feel anxious in science lessons, because they are afraid that they won't know the answers to the questions that their children pose. Be aware that this is nothing to be too concerned about; the important thing is to emulate 'how to find out' with the children. Remember that scientific discoveries and theories are continually evolving - there will always be questions that we don't know the answer to. That's science!

Remember...

- **Great Science Shares are child-led enquiries**

Encourage children to develop some questions that they would like to investigate and encourage as many as possible – you will eventually work to improve them, naturally cutting it down to one.

- **Not all questions lead to a scientific enquiry**

So now get the children to sort their questions into those that can be answered through scientific enquiry.

- **Organise questions**

by asking the children to decide which type of scientific enquiry will help them to answer their question.

- **Give the children enough time**

to carry out their investigation, whether that be at school or home or both - allow time for them to make mistakes and try other ideas.

- **Once their investigating is done**

encourage the children to think about what they learnt from their enquiry and how they would like to present their findings?

- **Encourage the children to communicate their learning**

in creative ways. What will they say? What will they show? What will their audience learn?

For some more advice visit

How to think scientifically

explorify.wellcome.ac.uk/updates/downloads

Working Scientifically Information Sheets

www.ogdentrust.com/resources

Guide to asking scientific questions

[Appendix A](#)



G How can we share our GSSfS event with others?

The Great Science Share for Schools is a national campaign, which has gained interest from other countries as well. Social media as well as local and national newspapers and television have been shown to enliven and enrich the GSSfS process.

Using social media

Social media offers us a great way to communicate our enthusiasm and raise the value and visibility of science far and wide.

Using social networks can:

- create a real buzz around your event, allowing parents/carers, community groups and those further afield be aware of the children's scientific questions and investigations.
- give children an additional way to ask questions to scientists and engineers, connecting the school to key organisations and lead figures.
- publicly acknowledge the support you receive from sponsors, local businesses and supporting schools.

There are different social media platforms GSSfS use to share learning each year.



Twitter – Follow us [@GreatSciShare](#) [#GreatSciShare](#) [#AskAQuestion](#)

Using twitter you can create short messages to describe the children's questions, share when and where your event is, and who is invited etc. You can also pose questions to other people to answer.

A key thing in all messages is to use the main twitter hashtags [#GreatSciShare](#) and [#AskAQuestion](#), as this links everyone's messages together. Tweets work best when they are accompanied by a photo or image, and you tag in relevant parties: e.g. [@GreatSciShare](#) [@UoMSEERIH](#) etc.





Facebook – @GreatSciShare4Schools

Facebook offers you information, updates and resource ideas from the campaign team. Competitions also run via this group. You can also post questions, images and notifications using this platform, sharing ideas and linking friends and colleagues to the campaign.

Important: With all use of social media it is important to abide by your standard safeguarding procedures and protocols at all times.

Connecting with local press

A press release is a brief article (about an A4 side or 300 to 400 words) that you send to your local newspapers and use on your school/organisation website/newsletters prior to or after your event. An example is provided in Appendix C.

Giving at least one week's notice to a press team is vital if it is going to be picked up the press. If you are interested in getting press (photographer and journalist) to your event, this is best done even earlier.

Make your press release stand out by being concise, adding a photograph and an interesting headline; e.g.

- Science receives a springboard through the Great Science Share for Schools
- A new science event has come to town! A science conference run BY children FOR children.
- 150 children from Derbyshire schools gather to celebrate their scientific discoveries.
- Next generation of scientists and engineers take the stage in a dynamic celebration of science – part of a UK wide network of Great Science Share for Schools events.

Who can I ask for help if I need it?

The campaign team is based within the Science & Engineering Education Research and Innovation Hub at the University of Manchester. Supported by key sponsors including BASF, Manchester City Council, Siemens and the Comino Foundation the team is there to support you wherever you are. Acknowledgement goes to the wide range of collaborators that go to great lengths to support the campaign, including the Primary Science Teaching Trust, Wellcome Trust, Primary Science Quality Mark and STEM Learned Societies.

To contact us:

e. greatscishare@manchester.ac.uk

t. 0161 306 3991

Appendix A: Guide to investigating scientific questions



How does something change?

Children observe or measure how one variable changes over time. The amount of time can vary from really short to much longer periods of time. Observations can be recorded in a number of ways: tables, notes, diagrams, diaries, journals and logs – whether by hand or using IT. For example: What happens when I put a jelly sweet in water?



How are things the same or different?

Children identify features of different things, looking for similarities and differences and where possible sort them into groups. It is also useful to use published guides or keys to help them identify individual objects such as plants, animals, rocks or materials. Classifying and grouping links with data handling in mathematics allows children to use strategies they are familiar with to help them to describe how they have sorted e.g. Venn diagrams, Carroll diagrams, branching keys. For example: What type of rock is this?



Is there a pattern in the observations I make?

Children identify the effect of changing one variable on another, looking for patterns and relationships without necessarily being able to control all the other variables, which could have an effect. For example: If we wanted to know if there is a relationship between the height of a tree and its circumference we can look to see if there is a relationship between these two variables. However, we cannot control variations in the patch of soil they grow in, or the amount of light or water available to those specific trees. Many pattern-seeking enquiries will lead to a survey, where children can plot and compare discrete points of information alongside one and other. In these cases, a scatter graph can be a useful tool for highlighting relationships between the two variables. For example: Can the tallest people jump the furthest?



What is already known about this?

Children use secondary sources of evidence to answer their questions. It is a really useful skill to be able to access information and then use and apply it creatively to further their own understanding, and one that links well with literacy development. The important aspect of working scientifically in this way is to encourage children to learn to be critical and evaluate the quality of the information before them, to check the source is reliable and the information is accurate. For example: Who was the first person in space?



What is the effect of a change on something else?

In both of these enquiries, children will identify one variable to change and one variable to measure. However, there is a slight difference between the two forms of enquiry:

Comparative testing – Children identify the effect of comparing one variable with another, whilst attempting to keep all other variables constant. For example: Which surface does the car travel down the fastest? Here you are comparing how separate surfaces e.g. carpet, vinyl, wood - affect how long the car takes to travel down the ramp. The surfaces will not change as a result of the investigation. Therefore, the results of a comparative test will be in the form of discrete data, which could be displayed in the form of a bar chart.

Fair testing – Children identify the effect of changing one variable on another, whilst attempting to keep all other variables constant. For example: at which temperature of water does an ice cube melt the most quickly? In this enquiry you are looking to see the effect of the temperature of the water on the time it takes for the ice cube to melt. In this case, there are two things that change during the process of the investigation – the temperature and the time. Because of this the measurements are described as 'continuous data', which could be displayed in the form of a line graph.

Appendix B: Checklist for Satellite Events

Prior to the event

- ☐ Book the date in the school calendar – 18th June 2019.
- ☐ Hold a staff meeting, talk about the Great Science Share for Schools using the PowerPoint slides
- ☐ Book the space for your event, e.g. your school hall, a community space etc.
- ☐ Check the maximum capacity of your room.
- ☐ Register your satellite event at www.greatscienceshare.org
- ☐ Decide who you will involve: your class, your key stage, the whole school, other local schools.
- ☐ Inform parents/carers to encourage their children at home to consider scientific questions they're interested in exploring.
- ☐ Invite who your VIPs might be and when/how you'll invite them.
- ☐ Consider refreshments – will the children get a drink/biscuit, do you need the PTFA to organise tea/coffee for guests?
- ☐ Inform the school site manager to support you prepare and clear away after the event.
- ☐ Meet with the school council to get their support in planning the Great Science Share for Schools.

In class

- ☐ Prepare the teachers for working scientifically – use the resources online to discuss the practice already taking place and how this can be used at the event.
- ☐ Provide children with the time and support to select which scientific question they will investigate and demonstrate to others.
- ☐ Capitalise on cross-curricular links, e.g. with literacy, computer science, PE, music/art etc.

Nearer to the date

- ☐ Send out a press release or organise for your local newspaper to report on the event.
- ☐ Work with your site manager to risk assess the venue, including collecting risk assessment forms if other schools are bringing their activities to your event.
- ☐ Print off Great Science Share for Schools Certificates & Printables.
- ☐ Decide on the best layout for the room, and the agenda for the event.
- ☐ Encourage the children to practice demonstrating and communicating their investigation. Ask them whether they think a poster or a handout may help them explain their work to other people.
- ☐ Identify children who will open and close your event, who will receive VIPS etc.

Send to Guests prior to the event

- ☐ Confirm the date and time of the event, provide advice on travelling to the venue and advise them on parking arrangements.
- ☐ Brief them about asking children questions, listening and encouraging, and remind them about safeguarding.

continues ...

On the day

- ◡ Prepare your venue. At each station:
 - ◡ Lay out tables and exhibition boards, a blank A4 GSS template for the children to write their question on. Kitchen roll / Bin Bag, so that they can keep their area tidy.
 - ◡ Allocate each group of children their own station, where they will show and talk about their work.
- ◡ Allocate a space for refreshments.
- ◡ Layout materials for certificate giving/speeches.
- ◡ Decide on any parking arrangements and registration procedures for visitors.
- ◡ Set up computers and sound check any Audio-Visual Equipment if necessary.
- ◡ Brief everyone supporting the event on safeguarding, fire procedures, toilet arrangements. Remind adults about their role in promoting the Great Science Share ethos.
- ◡ Have a welcome team to support children as they set up or meet & greet people as they arrive.

Appendix C: Sample Press Release

Children from across Lincoln are gearing up for The Great Science Share for Schools. This celebration of science will take place at Summer view Primary School on 18th June 2019. It involves children from 9 primary schools coming together to share their work with each other and a host of special guests.

The **Great Science Share for Schools** is a national campaign to inspire young people to sharing their science learning with new audiences. Last year over 39,000 children across the UK got involved by the campaign. This year the reach is even wider with events all across the UK.

Add your own quotes here for example: what is special about your event? What are you most looking forwards to?

For more information on the event, please contact

Mrs S Einstein on myemail@school.ac.uk

or visit www.greatscienceshare.org for details.

Follow the event on twitter [@GreatSciShare](https://twitter.com/GreatSciShare) using the hashtag [#GreatSciShare](https://twitter.com/GreatSciShare) [#AskAQuestion](https://twitter.com/GreatSciShare)

[ENDS]

Notes for the Editor

The Great Science Share for Schools is a national campaign pioneered by The University of Manchester. It is created to inspire young people to share their science learning with new audiences. It works to raise the profile of primary science and engineering whilst celebrating the scientific and creative process of working scientifically, developing aspirations towards careers in science and engineering. Further information regarding the Great Science Share for Schools may be found at www.greatscienceshare.org





www.greatscienceshare.org

@GreatSciShare #GreatSciShare #AskAQuestion



With thanks to all sponsors and collaborators in past and future Great Science Share for Schools events!

