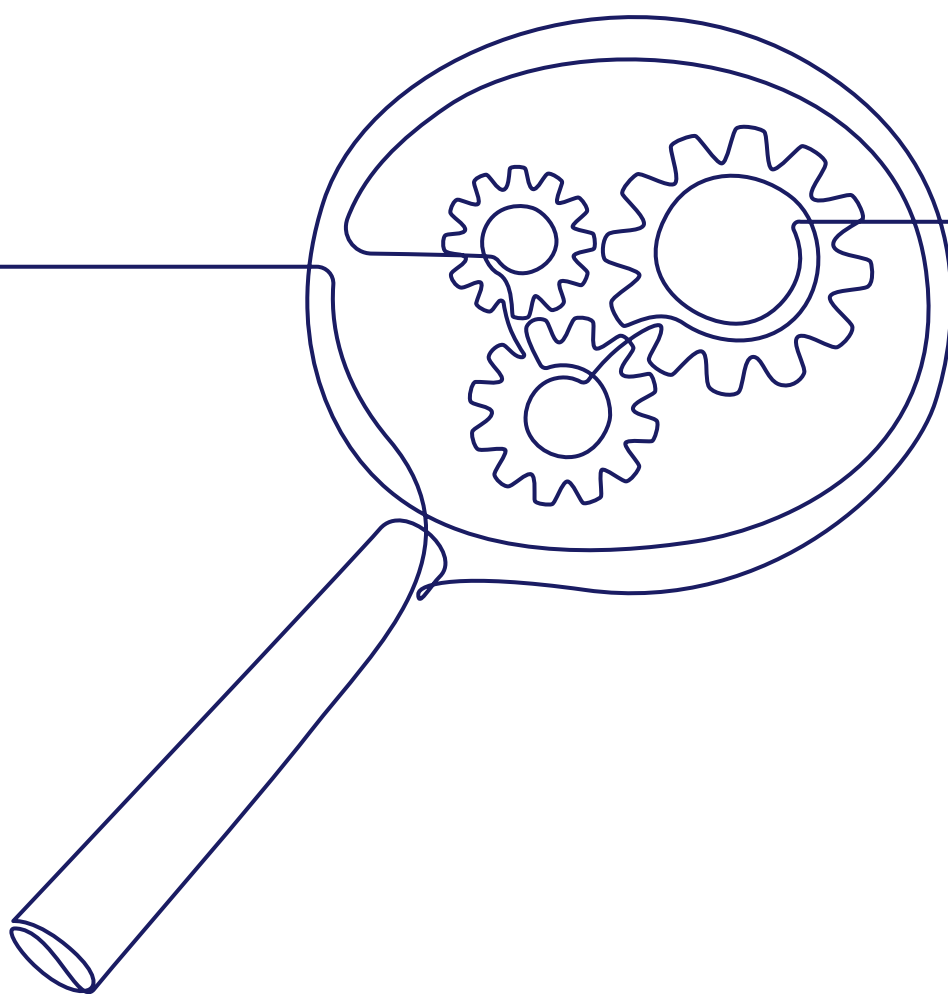




Science and
Technology
Facilities Council

The Wonder Initiative: Phase 1 Overview (2018–2021)



Introducing the Wonder Initiative

STFC's Wonder Initiative aims to help level the playing field. It's about creating exciting and meaningful opportunities for people from deprived areas, particularly young people, to show STEM is relevant to their experiences and futures, providing numerous opportunities for study and work.

A person's socio-economic background significantly influences the likelihood of pursuing careers in science, technology, engineering and mathematics (STEM).

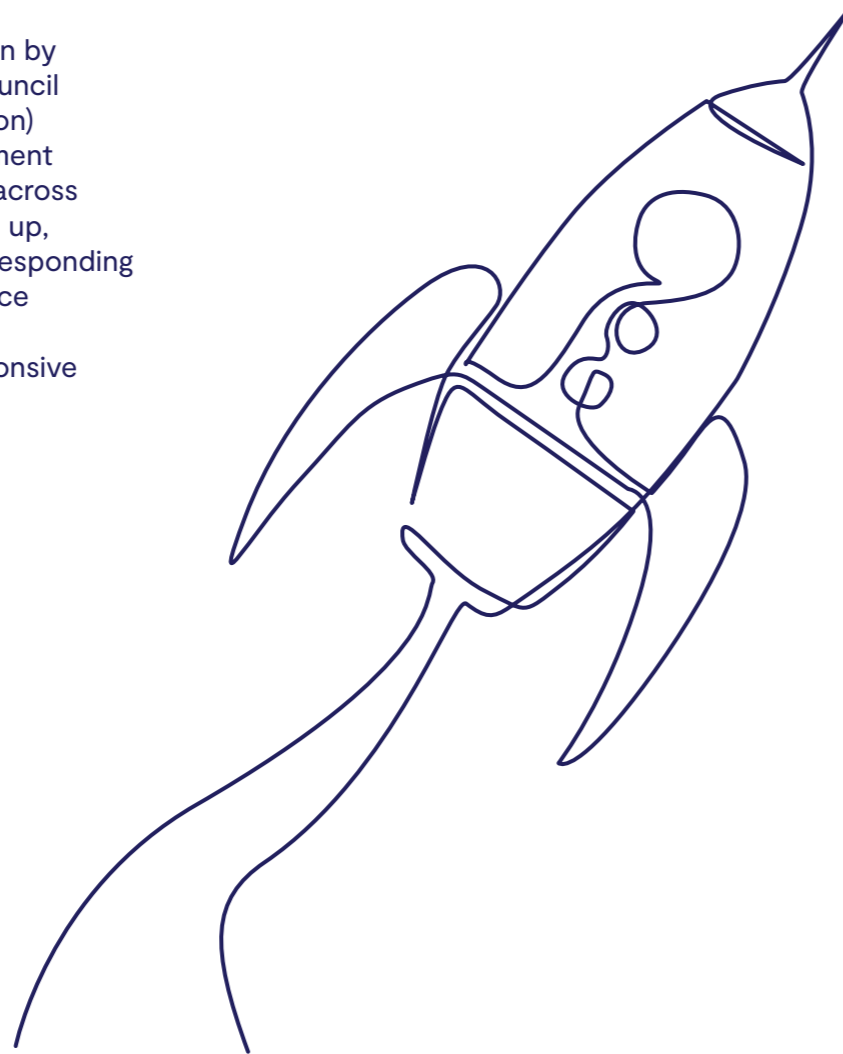
According to the [ASPIRES research project](#) and other sources, young people from areas of greater deprivation have fewer opportunities to engage with STEM. As a result, they typically have lower 'science capital' – less exposure to science-related knowledge, experience, values and attitudes in their daily lives.

The Wonder Initiative is strategically driven by the Science and Technology Facilities Council (STFC) (part of UK Research and Innovation) and delivered in partnership with engagement specialists and community organisations across the UK. It builds projects from the ground up, focusing on listening, understanding and responding to what people want to know about science and technology. It also involves adjusting established programmes to be more responsive to audience needs.

Together, STFC and its Wonder Initiative partners and grant holders are focusing on the 40% most socio-economically deprived areas of the UK, particularly looking to influence:

- Eight to 14-year-olds, responding to research suggesting this is a critical window for influencing positive STEM attitudes and ambitions
- Parents, teachers, carers and other adults who shape young people's aspirations

STFC has commissioned an evaluation of the first phase of the Wonder Initiative (2018-2021) to help shape subsequent ones. The evaluation considers how successfully STFC and its partners have reached and enthused target audiences, setting the foundations to engage more effectively long-term.



The role of STFC

STFC has various Wonder Initiative responsibilities:

- **Strategic lead** – setting the context and direction, commissioning an evaluator, and sharing learning across partners. It has a project team, a dedicated steering group and is supported by the [Advisory Panel for Public Engagement](#)
- **Coordinator** – awarding grant funding and developing partnerships
- **Delivery organisation** – applying 'Wonder' principles to its own PE programmes and projects

Becoming part of the Wonder Initiative

The Wonder Initiative's strength is the diversity of its offering – a range of projects delivered by various organisations in many settings.

STFC considers it a cross-cutting initiative, permeating all of our work, rather than a single funding call. In effect, it's shorthand for a shift in approach to engagement rather than something limited to specific projects. Ultimately, it sees reaching Wonder audiences as a core engagement ambition.

Phase 1 of the Wonder Initiative (2018-2021) reached at least 767,000 participants through:

- **32 public engagement grant projects** – receiving between £15,000 and £200,000 for planning, delivery or evaluation, scaled according to newness, scope and longevity.
- **2 national strategic projects** – large-scale projects with national reach undertaken with STFC.
- **STFC National Laboratories PE (NLPE) programme** – locally based around STFC's observatory and laboratory sites in Edinburgh, Cheshire and Oxfordshire.

Reaching Wonder audiences in diverse ways

These examples highlight the diversity of Wonder projects. There are more case studies on our website.

- **NLPE** – A collaboration between STFC Rutherford Appleton Laboratory and local science festival IF Oxford, '[Glow Your Own](#)' offers free online workshops and material packs (some with a donation) for families and individuals from a deprived area of Oxford to learn computer coding by designing and coding their own Arduino-controlled LED lanterns. The project, which combines art and engineering, brought the lanterns together in an interactive digital light experience as part of the Oxford 2021 Lights Festival.
- **National strategic partnerships** – led by the Reading Agency and involving local libraries within Wonder communities, the UK-wide

initiative [Reading Sparks](#) connects reading for pleasure with STEM and the arts. It includes young people's library-based activities and in-depth participatory work resulting in podcasts, films, songs and other creations relating to book topics as varied as volcanoes and sharks. It also offers take-home reading bags with science activities for children to enjoy with their families.

- **Grant scheme** – Bristol-based Science centre and educational charity '[We The Curious](#)' worked with Year 5 and 6 pupils from a Wonder community, co-creating resources including flipbooks, animations and films to help answer the children's questions about space science. This ensured they learned about things they were interested in, such as 'can you cook and eat real food in space?' rather than assuming what they wanted to know.

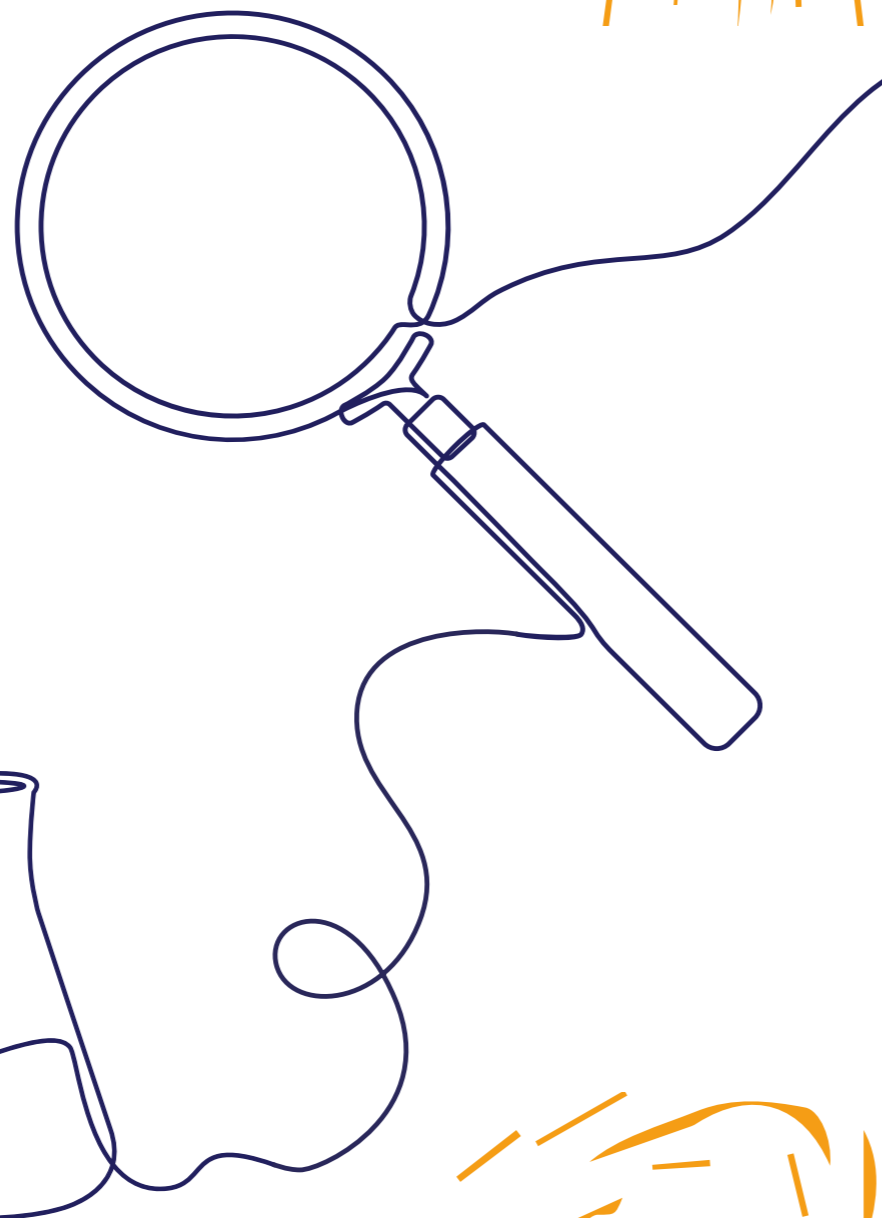
Evaluating the Wonder Initiative

STFC commissioned [Cloud Chamber](#) to do an independent evaluation of the first phase of the Wonder Initiative (2018–2021). The report highlighted some key themes that will be valuable in shaping future activity.

Encouragingly, there is much enthusiasm amongst PE practitioners to engage Wonder audiences and Wonder audiences have embraced well-targeted STEM engagement opportunities.

There's plenty of evidence of good practice in planning and delivering projects and engaging audiences on the day. There's also a willingness amongst the PE community to share experiences and ways to overcome common challenges.

STFC encourages engagement specialists and community organisations to use these valuable learnings to develop projects and apply for Wonder-related grants.



What we learned: Headline findings

This section summarises the findings of the evaluation report for the first phase of the Wonder Initiative (2018–2021). The projects have provided rich evidence, despite some inherent and external challenges. STFC tasked the evaluator with exploring the initiative's success in line with five key themes.

1. Reaching Wonder audiences

The overall proportion of Wonder audience was above 40% in 2019, 2020 and 2021. This is an important achievement. It's the point at which Wonder audience participation equates to the proportion of people living in Wonder communities across the UK.

For context, total reach figures for Wonder and non-Wonder audiences are down on 2018 figures, with volumes two-thirds of what they were pre-initiative in 2021. The reasons for this aren't clear, but Covid-19 is likely a major factor.

And while hard to consistently identify data from 8–14-year-olds in a general audience, the reach for this target group increased by 38% over the initiative, from 32,000 to 44,000.

2. Making a difference to Wonder audiences

Wonder audiences enjoyed their event experience, feeling welcome and inspired. These outcomes were similar to non-Wonder audiences, suggesting the events were well-tailored.

For instance, when evaluating grant projects, both audiences scored above 4 when asked if they felt welcome (with '4' being 'agree' on a five-point scale). Similarly, both groups felt involved, with three-quarters of participants (Wonder audience 75%, non-Wonder 74%) responding positively to the statement 'I was able to ask questions and join in.'

Interestingly, when looking at grant projects, Wonder audiences were more interested in studying or working within science after an event than non-Wonder audiences (72% and 63%, respectively).

3. Engaging and enthusing Wonder audiences

From interviewing PE practitioners and project deliverers, it appears there is a willingness and enthusiasm to engage Wonder audiences. Many practitioners are already committed to reaching underserved audiences.

We've also gathered valuable evidence on effective ways to encourage schools to 'partner' on Wonder activity and engage Wonder audiences directly.

Schools can find it challenging to engage with external organisations when they face so many pressures, particularly post-Covid-19, but practitioners have been sharing approaches that work. These include being explicit about links between activities and the curriculum and curating personal relationships, sometimes using organisations with established relationships, e.g., the Ogden Trust.

When engaging with Wonder audiences directly, the most common themes among PE deliverers were creating a welcoming environment and avoiding practical obstacles to participation. For instance, ensuring an easy-to-reach location and providing all materials, even pencils and pens.

Practitioners also highlighted flexibility – responding to changing needs and moods in the moment – as a must for effective engagement.



4. Building public engagement capacity

Project leads and practitioners found 'Wonder' a valuable framework for targeting PE activity. Feedback suggests they clearly understand who the audiences are and why.

The 'Wonder' concept also allows STFC to set a clear direction for science public engagement, both its own approach and that of grant holders. And it encourages knowledge sharing so partners and grant holders feel supported with planning, delivery and evaluation. This holistic approach has the potential to be an exemplar for other funders.

STFC encouraged collaborative learning through informal Zoom drop-in meetings. They initially provided group support to address challenges during the pandemic but continued as forums for networking and sharing good practice. Participant-driven, they were broadly welcomed by the one-in-three grant holders who took part. And some grant projects have collaborated after meeting in the sessions.

In addition, STFC commissioned the National Co-ordinating Centre for Public Engagement (NCCPE) to run four 'Wonder Match' sessions across the UK. The events encouraged STFC-funded researchers and community organisations to explore collaborations, leading to 11 partnerships – two securing STFC grant funding.

5. Modelling an audience-focused approach

Wonder projects demonstrably reflect their audiences' needs, interests and life experiences. This highlights PE practitioners' efforts to develop relationships with community partners – their willingness to share leadership, be guided on what engagements work best locally and taking time to collaborate.

While this approach isn't unique to the Wonder Initiative – with much down to the motivation and mindset of individual practitioners – Wonder has encouraged an audience-focused approach. It has supported practitioners and community organisations to collaborate through 'Wonder Match' and has coordinated regular virtual drop-ins for grant holders to share experiences.

STFC's next challenge is encouraging current non-Wonder-focused practitioners to shift engagement priorities in this direction.

What we learned: Challenges

Taking a new audience-targeted approach to engagement with multiple projects and partners has inherent challenges. And all those involved have had to contend with the direct and indirect impacts of the pandemic.

Understanding the challenges helps STFC, partners and grant holders to identify and accept limitations, hidden opportunities and where to focus attention in subsequent phases. They include:

- **Covid-19** – unsurprisingly, this significantly impacted Wonder activity, most notably for NPLE. Event numbers fell (NLPE activity by a third in 2020 and remaining at similar levels in 2021), and in-person engagement shifted online (95% of NLPE events were virtual in 2021), requiring practitioners to learn new tech skills. As well as delivery, this also impacted information gathering for evaluation, making drawing trends over four years problematic. And the impacts of Covid-19 are lasting. For instance, schools are proving hard to engage as they face pressures in helping children catch up on lost learning.

- **Wonder Initiative scope** – the strength of an audience-focused approach to engagement, encouraging a rich and highly varied evidence base of PE activities with different monitoring processes, can make it difficult to draw conclusions.
- **Identifying a Wonder audience** – consistently identifying data from 8-14-year-olds within a general Wonder audience has proved challenging. Also, many projects use a school's postcode as shorthand to identify a Wonder audience, but this doesn't necessarily reflect the socio-economic make-up of its catchment area.
- **Project evaluation techniques** – traditional qualitative and quantitative methods have proved less successful with Wonder audiences. And taking a more flexible approach to securing insight means there's been less consistency across projects, making evaluation more challenging. In collaboration with the external evaluator, the project team created a 'Wonder toolkit' to support project leaders with their evaluation. However, take-up was limited as it was delivered part-way through the initiative.

What we learned: Key insights

- **Change is possible** – with clearly defined audiences and a commitment to engage them through activities that resonate with their experiences, there can be a positive shift in reaching under-represented groups.
- **Meaningful engagement can level the playing field** – outcomes for Wonder audiences largely mirror those of their non-Wonder counterparts. This suggests that continued effort and encouragement will prime underserved audiences to see the opportunities in science and technology.
- **The Wonder Initiative has a galvanising effect** – PE practitioners see the value and opportunity in embracing the latent potential of Wonder audiences. It allows STFC to set a clear leadership direction and provide a helpful framework for activity.
- **There are no quick wins or shortcuts** – implementing effective Wonder projects takes time and flexibility at a strategic and local

delivery level. The projects that make the most difference are co-created with the audience through community partnerships and have built-in flexibility to respond to on-the-day demands and moods.

- **Evidence gathering remains challenging** – just as Wonder is a diverse set of audiences, so is the Wonder projects. Smaller projects may need more time and resources to monitor as effectively as larger ones, and some sizeable projects may already have their own approaches. Embedding an evaluation toolkit should make this easier in future phases.
- **All public engagement can benefit from Wonder methods** – approaches that prove effective with Wonder audiences are good public engagement practice. There's no mystery or secret formula. Arguably, using these 'gold standard' engagement methods with Wonder audiences is critical to success.

Next steps

STFC remains committed to engaging Wonder audiences and helping them embrace STEM opportunities. The Wonder approach is part of [STFC's Strategic Delivery Plan for 2022-2025](#) and will be fundamental to the organisation's public engagement strategy (2023-2028). This strategy, and continuing conversations with STFC's various communities, will shape the next phase of the Wonder Initiative.

In the meantime, it's important to move evaluation from page to practice, rigorously applying learnings and getting better at sharing them. As part of that commitment, STFC is making available the phase one evaluation report, project case studies and an advice document for project leaders.

Want to join STFC in making a difference? We continue to prioritise Wonder work in [grant applications](#).



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ukri.org/councils/stfc

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