

Evaluation Report



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I learnt about atoms
Want to come back to these events
Learnt how a hover craft works using renewable resources
I learned about life on other planets

Gave us lots of ideas starting a science club for the children
Helps maintain enthusiasm for learning science Really hands on

More of the same

Loved doing their fingerprints it was fun and interactive Encourages young girls to get into science not just boys

How to make a rocket at home easily for the kids

Got them thinking about new things How glow sticks work

Makes science fun for family Colour chemistry Good mix

Inspired discussion
So interactive

Executive Summary

Dundee Science Festival returned for its seventh year to deliver over 30 engaging science-based activities and opportunities for the local communities across the city as well as 8 days of school activities. Led by Dundee Science Centre, the primary aim of the 16-day festival was to engage with and involve local people within a variety of settings. Dundee Science Centre achieved this by collaborating with several partners across the city, as well as developing meaningful relationships at a community level.

With a variety of events on offer including creative workshops and family drop-in days at community centres, as well as different themed weekends at Dundee Science Centre, the festival reached a total of **9,173** people. It was estimated that 36% of festival visitors (or 3,295) were families and 18% (or 1,623) were adults or young adults attending out with family groups. 46% of festival visitors (or 4,254) were school groups.*

99% of the 345 people surveyed stated that they would like to see more events like this in their local area, with the same proportion stating that they would come back next year, supported by feedback such as -

"Holding the science festival in community centres has been important for local people and the co-productive approach it uses is very meaningful"

Community Group Leader

Dundee Science Festival has not only reached people within the city of Dundee but has also made a significant contribution to the learning and understanding of science within the Tay area.

^{*}Based upon a sample of 72 respondents.

Aims & Ethos

Mission Statement

Our vision is a culture of curiosity, confidence and engagement with science, for the whole community

Dundee Science Festival is operated by Dundee Science Centre, as a key strategic initiative in support of its mission. Dundee Science Centre is a registered charity with a remit to support education and lifelong learning throughout the Tay area. As part of this remit we have invested significantly in the festival to make it a celebration of science for our local community. We have specifically structured the festival to ensure that it is focused on achieving our aims - these being, to engage individuals, groups and families at Dundee Science Centre, to the extent that local people regard the science centre as a community hub, and also to engage 'hard-to-reach' audiences within their local areas.

Events Programme Summary

Themed Weekends

This year's festival was structured around three themed weekends in Dundee Science Centre, aimed at families:

- Medicine & Health (29/10/16 & 30/10/16)
- Animals & the Environment (05/11/16 & 06/11/16)
- Gaming & Digital Technology (12/11/16 & 13/11/16)

These events allowed local people to access a variety of activities, delivered by numerous providers from across Scotland – including areas such as Glasgow and Fife.

Visitors enjoyed the quality of engagement through activities such as animal handling, computer building, fitness tests, Guide Dogs' puppy walks, programming challenges and a number of different shows that also took place throughout each weekend.

The impact that the activities had on people was evident in their comments such as,

"I learnt how the inside of a computer works and how to build one myself"

Community Group Member at Gaming & Digital Technology Weekend

"Kids enjoyed [the event] and learned a lot" Visitor at Animals & the Environment Weekend



Discussion Groups

Two discussion groups were held within the science centre to complement the themed weekends and attract a different audience: teenagers and adults. 'Ties to the Tay' and 'Discovering Data' were free of charge to encourage community groups to attend, and offered people the chance to engage in lively debates on highly interesting topics which led to some tremendously thought-provoking engagement, for both the participants and the provider.





Creative Workshops

The creative workshops allowed local people to take part in smaller classes that involved being mentored by experts to create their own keepsake, including photo prints and personalised pendants. These events were also free of charge. The events took place in several community centres around Dundee – Kirkton, Douglas, Menzieshill, Ardler ad Finmill Community Centres and also MAXwell Centre Participants commented on the value of these events. Although many were initially attracted to the event based on the surface value (e.g. the chance to make some jewellery), feedback indicates that their knowledge of the science behind the activity increased after attending.

"Learnt about the science in making a ring. Creative as well as fun!"



Science in Shopping Centres

A number of activities took place at three events held inside local shopping centres – the Overgate & Wellgate shopping centres – under the title of 'Saturday Science Live'. These events focused on reaching people who wouldn't normally attend a festival event or come into the science centre itself using smaller, drop-in activities to attract passers-by. Activities included those provided by partner organisations as well as those designed and delivered by Dundee Science Centre's team.

This event format led to more community engagement reaching a different audience, evidenced in the visitor feedback.

"It made science appear 'hands-on' and fun instead of boring."





Science Adventures

The 'Science Adventures' were drop-in style, free events held in local community centres in four different areas of Dundee – Douglas, Ardler, Menzieshill and Charleston. These events aimed to offer engaging and informal activities that people could access in their local area. Each event varied in scale and content, allowing locals to attend all of these events and learn something new every time. The two evening events, held at Douglas and Charleston Community Centres, were of a slightly smaller scale that enabled attendees to interact with the experts in more detail. The event in Douglas Community Centre, although a 'Science Adventure', was space themed and aptly named 'Destination Space'. This theme was requested by the community centre following the success it had with local people at Dundee Science Festival 2015.

"It reignited my friend's interest in space, he hadn't been interested in much, but after putting the space suit on and taking part in activities he was really excited"

Community Group Member at Destination Space event

Charleston Community Centre hosted the smallest 'Science Adventure' of the four due to restricted space, however it was evident that participants were gaining a lot from it. The majority of people who came in at the beginning of the event stayed throughout the two hours that it ran, and they even stayed slightly later to ask more. Following on from these first two events, both 'Science Adventures' that took place in Ardler and Menzieshill Community Centres were of greater size to cater for the increased demand on in-service days. The line-up included experts from many different organisations, such as Abertay University, Dundee & Angus College, Cosmos Planetarium, University of Dundee, University of St Andrews, as well as several STEM Ambassadors. Participants were invited to take part in lots of activities that covered a wide range of topics such as chemistry, physics, astronomy, engineering and biology.

Each of the events proved to be a great success, and very meaningful for the people who attended (experts and participants alike) based upon feedback such as,

"Starts discussion and curiosity between child and parent."

"We're starting a science club for the children!"

"These experiments made science more relatable to real life."

"Coming back to these events. It opens opportunities for young people to get involved with science, and show that pathway is available for them."



Big Bang - the Rocket Men

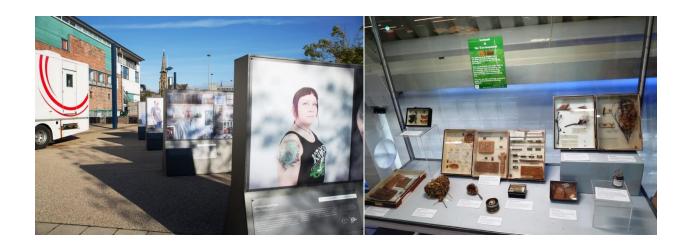
Two enthusiastic chemists and an Advanced Higher pupil delivered a spectacular show at the science centre to illustrate the science of fireworks. This family-friendly evening was informative yet fun, with demonstrations such as the exploding pumpkin and hydrogen balloons, culminating in a big liquid nitrogen explosion with ping-pong balls.

"The presenters made it so much fun but it was really informative."



Exhibitions

Dundee Science Centre also hosted new exhibitions as part of the festival. These exhibitions displayed artwork relating to climate change and environment of glaciers, as well as the process by which new drugs are discovered and developed - linking in with several drug discovery experts delivering activities at community centre events.



Schools Programme

Dundee Science Festival 2016 included two series of events for school groups. The first, coordinated and delivered by Dundee Science Centre, included eight activity days for all levels from Early Level to 3rd Year secondary pupils, covering themes such as astronomy, biology, computing, chemistry and physics. In total, 593 pupils and 95 adults took part in our interactive science workshops across the nursery, primary and secondary days. The secondary 'Chemistry' and 'Physics' days also included careers-networking sessions, giving pupils a chance to find out from STEM Ambassadors, researchers and other professionals how they use these sciences in their everyday work.



The second series of activities was coordinated by Abertay University on behalf of Dundee City Council's Children and Families Services. The 'Dundee Primary Schools Science Week' successfully ran from Monday 31 October to Friday 04 November. This action-packed week of science, technology, engineering and mathematics, included workshops, presentations and hands-on opportunities for P1 – P7 pupils from local, national and international providers. Events took place in 14 host schools and 4 local venues including the Botanic Gardens and Verdant Works. The 3,286 participating pupils and 240 teachers/accompanying adults were treated to an exciting programme covering a wide range of subjects including; investigating wind-up toys and variables that affect them, learning about life on the International Space Station and how science makes living in space possible, and discovering more about Scotland's biodiversity and how to protect Scotland's wildlife.

Providers:

Abertay University
Animal Magic
Animates
University of Dundee Botanic Gardens
Bricks 4 Kidz
Discovery Point / Dundee Heritage Trust
Dundee & Angus College
Sphere Science

Dundee Science Centre
Mills Observatory / Leisure & Culture Dundee
Royal Zoological Society of Scotland
University of Dundee
Theodor-Litt-Schule Giessen
thinkScience Ltd
Verdant Works / Dundee Heritage Trust

Events at the University of Dundee

In addition to the plethora of festival events hosted and facilitated by Dundee Science Centre, a number of events were also delivered by the University of Dundee, an important partner of the festival.

University of Dundee hosted three 'Talk & Tour' events that offered local people to attend lectures and discussions on very relevant topics, before receiving a tour of whichever facility they were in – Ninewells Hospital and the University of Dundee. Coinciding with each of the themed weekends at Dundee Science Centre, these University events focused on the topics of Dementia research, wildlife conservation and digital technology. This was to enable visitors to build on their knowledge by attending more than one event on a similar theme.

"It is mindblowing! I love how it has inspired my sons both in terms of their futures & being students. The students were really engaging! What a WONDERFUL evening"

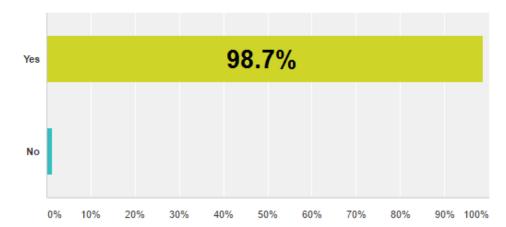
Visitor at Generation Tech



Future Events

50.6% of visitors had never attended a Dundee Science Festival event before and **97.4%** of visitors would now consider visiting Dundee Science Centre after this event. **98.7%** of visitors would like to see more events like this in their area with the same proportion stating that they would attend the festival again next year:

Would you come back to Dundee Science Festival next year?



Community Engagement

Dundee Science Centre's vision is a culture of curiosity, confidence and engagement with science for the community. It plays a vital role in making science part of culture for the whole community, helping families learn together, supporting Scotland's Curriculum for Excellence, inspiring learning professionals, and mobilising research and industry to engage the public. These outcomes are evidenced in the variety of opportunities that were on offer throughout the festival and the collaborative efforts made by the numerous experts and professionals, who delivered activities, workshops and interactive shows. Dundee Science Centre is a science learning hub and community resource that works to empower local people through the building and maintenance of meaningful relationships. This leads to a more positive impact on local areas and facilitates genuine change at a grass-roots level

Part of this work involved the development of a 'Plain English' version of the brochure such that it was more accessible to individuals with mild learning disabilities, such as dyslexia, as well as people who suffer from visual impairment. This was developed after consultation with local professionals.

Additionally, the festival values greatly the participation of local people and hopes that the festival can become as much of a community resource as the science centre has become. This involved organising focus groups with local members of the community, to ascertain more qualitative feedback on the festival. Dundee Science Centre staff deliberately approached groups with no previous relationship with the centre in order to acquire impartial feedback that will objectively reflect the work that is done. The findings of the focus groups will support good practice within Dundee Science Centre, whilst developing next year's festival using a coproductive approach. By maintaining meaningful relationships with local groups, the science centre can confidently involve them in the design and delivery of Dundee Science Festival 2017.

All of these values and approaches are woven throughout the community-based events and general format of the festival.

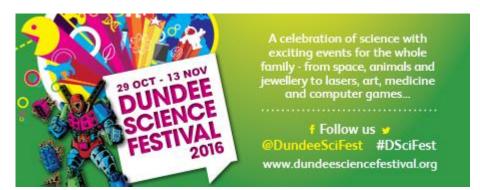
"When Kyle attended the animal handling session it was like he'd won the lottery. Having an autistic teenager has its difficulties in social situations but his eye lit up, with joy. The patience, understanding and care of everyone involved I cannot fault. Kyle didn't feel as socially awkward and joined in the other events held in the centre. The science centre is a happy place as soon as you walk in. I've never seen any of the staff with a frown, it's always a smile and that counts when you're dealing with children and teenagers on the [autism] spectrum."

Parent at the Animals & the Environment Weekend

Awareness Raising

Dundee Science Festival has become established as a family-friendly, cultural event for the local communities in the Tay area and is now firmly in place on the regional calendar.

The strength of the brand was built on from 2015, highlighting our continued community focus. This approach allowed us to emphasise our strength of delivering exciting hands-on activities to reach out and showcase our events to people who may not normally take part in science-related activities. We carried over the branding from 2015 building on the fun and friendly atmosphere, with refreshed colours and icons fitting with this year's themes to catch the eyes of old as well as new audiences.



The key thrust of the festival's promotion for 2016 was directed through five key media channels – print, public and press relations, local radio, online and social media.

42,000 A5 brochures and 400 A3 posters were designed, printed and distributed across Dundee, with direct door-to-door brochure delivery to 28,735 households. Local businesses, community centres, libraries and schools were also sent posters and leaflets to distribute or leave in venues.

Posters and outdoor banners were displayed around the city several weeks ahead of the festival to advertise the dates and website details.



Our media launch for the festival gained the attention from a number of press representatives including reporters from BBC News Scotland and STV Dundee.



A number of event features followed with a total coverage of 27 items in the press including The Courier, Evening Telegraph and The Sunday Times.



In addition to creating a PR plan highlighting key events in the 16-day programme, the area's biggest radio station Tay FM and also BBC Radio Scotland featured presenter talk-ups and interviews to promote the festival to regional audiences. Adverts also aired on Wave 102 radio station, with adverts also displayed on their website to boost visibility further.

watching a rocket launch during their visit to Dundee Science Centre. See

Dundee's

fine art

On top of utilising several webpages and local networks for event listings, a dedicated Dundee Science Festival microsite (www.dundeesciencefestival.org) built into Dundee Science Centre's website, featured detailed information about the festival.

Social media was used to engage the public and partners prior to and during the festival, with regular updates on Facebook and Twitter encouraging participants and members of the public to share their experiences using #DSciFest.

The Dundee Science Festival Facebook page saw an increase in page likes and overall engagement with page content increased, outlined in the 28-day summary below from 18 October to 15 November comparing changes with the previous period:

- 93 posts 232.1% increase from previous period.
- 25,543 people reached 241% increase
- 4,518 post engagements 554% increase
- 184 page views 31% increase
- 2,096 page likes 133 new likes

Twitter was also used during the festival, generating positive results outlined below from 18 October to 15 November:

- 37 tweets 164.3% increase from previous period.
- 18,800 tweet impressions 107.9% increase
- 853 profile visits 184.3% increase
- 89 mentions 1,012.5% increase
- 1.731 followers 34 new followers



Abertay University @ AbertayUni

#Abertay hoping to inspire the next generation of game designers at @DundeeSciFest this weekend! http://goo.gl/aQcx2h



RETWEETS 12 LIKES 11

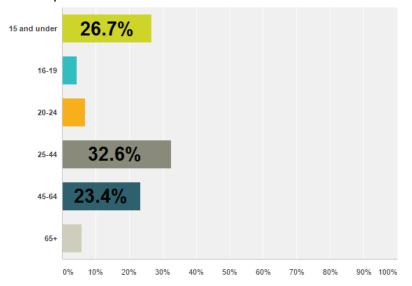
6:15 AM - 10 Nov 2016

Audience

Over **9,000 visitors** attended the public festival events and schools programme over the 16-day period. Of the 273 participants in our evaluation survey, a vast majority was seen to be from Dundee (63.7%). The remaining 33.7% were mainly from surrounding areas Angus, North Fife and Perth & Kinross; and a small percentage, 2.6%, were from the rest of the UK and overseas. The map below reflects the geographic spread of 244 respondents:



The majority of visitors answering the questionnaires were aged 25-44, with remaining visitors mixed between the options below:



The most popular way of finding out about the festival was word of mouth (23.1%), followed by the festival brochure (19.2%). 17.7% learned about the festival through Facebook and Twitter compared to 11% last year following continued growth and focus on social media in 2016. Press coverage was excellent throughout and many also learned about Dundee Science Festival through online coverage (15.4%).

Attendance:

School events – 4,254
Public events – 3,935
Exhibitions – 984
Estimated total engagement – 9,173

Note: Where events were not ticketed, some visitor numbers are close estimations based on observation.



Attendance Numbers

Dementia Talk & Tour	130
Medicine & Health Weekend	354
Go Dundee Bus	45
Saturday Science Live (Overgate)	150
Make a Personalised Pendant	12
Makerspaces & 3D Modelling	7
Screen-Print a Scientist	9
Ties to the Tay	17
Fun with STIXX	22
Make a Personalised Pendant	12
Protecting Paradise	35
Animals & the Environment Weekend	800
Saturday Science Live (Wellgate)	100
Science Adventure (Charleston)	39
Cyanotype	12
Discovering Data	23
Travelling Gallery (NEoN Digital Arts Festival)	88
Destination Space (Douglas)	63
Big Bang - The Rocket Men	130
Science Adventure (Ardler)	118
Generation Tech	55
Out of this World: The Solar System Show	283
Science Adventure (Menzieshill)	154
Gaming & Digital Technology Weekend	818
Polygon Your Face (NEoN Digital Arts Festival)	9
Saturday Science Live (Overgate)	200
Dundee Science Centre Schools Workshops	728
Abertay University Primary Schools Science Week	3,526
Drug Discovery Exhibition on Dundee Science Centre's Outdoor Piazza	709
Exhibitions in Dundee Science Centre	275
Individuals delivering activities	250
	9,173

Note: Exhibition numbers are based on visitors attending outwith public events at the science centre.

Individuals delivering activities are included as they also engaged in the various activities and were able to network with other experts and organisations.

Evaluation & Impact

To assess visitor learning outcomes, a national format created by the Association of Science and Discovery Centres was used across all adult and family events, in order to provide assessment of individual events as well as an overall view of outcomes. Allocating a numeric value to responses (1-5, as below) allows averages to be acquired, and the mapping of outcomes against the Generic Learning Outcomes.

	1 =	2 =	3 =	4 =	5 =
	Strongly	Agree	Neither agree	Disagree	Strongly
	agree		nor disagree		disagree
I enjoyed this event					
I learned something new					
I feel that science is more interesting than I					
did before this event					
This event has made me want to find out					
more about science					
This event has made me feel that science is					
relevant to my life					
I feel today has made me a little more					
confident about approaching science in the					
future					
I would recommend Dundee Science					
Festival to others					
I would trust science festivals to portray					
science more honestly than the media or					
government					

This format was accompanied by free-text questions to assess impressions of the best aspect of the event and what could be improved. Together, these formed the Dundee Science Festival evaluation forms, which were completed by hand at the event in question and analysed by the Dundee Science Centre team afterwards.

Feedback indicates that visitors enjoyed themselves and learned something new as a result of attending festival events. Willingness to recommend Dundee Science Festival to others remains high, consistent with previous years.

Average Scores

'I enjoyed this event'	1.30
'I learned something new'	1.36
'I feel that science is more interesting than I did before this event'	1.98
'This event has made me want to find out more about science'	1.86
'This event has made me feel that science is more relevant to my life'	1.71
'Today has made me a little more confident about approaching science in the future'	1.88
'I would recommend Dundee Science Festival'	1.32
'I trust science festivals to portray science more honestly than the media or government'	1.58

Market Research Students

To support the delivery and development of future festivals, Dundee Science Centre felt it to be imperative that in-depth questionnaires would be completed to explore the impact on visitors. Festival partner University of Dundee provided a team of market research students to work with the festival team to develop questionnaires before completing them with participants at some of the events. These questionnaires were completed at community-based events, such as the 'Science Adventures' and 'Saturday Science Live', and supported the findings of the science centre's evaluation from in-centre events and creative workshops.

The student team provided compelling evidence regarding the positive impact the festival has on its visitors. They concluded that the festival has had a long lasting impact on the visitors' interest and awareness of science:

- Over 90% of 66 respondents agreed with the statement that 'this event has inspired my children / grandchildren / children in my care to learn more about science'
- 53% said that they have been inspired to do more of their own research into science, when asked if they were inspired by the festival activities.
- 13% were inspired to do more home experiments with their children.
- 14% said they are now interested in starting school science clubs following festival events.

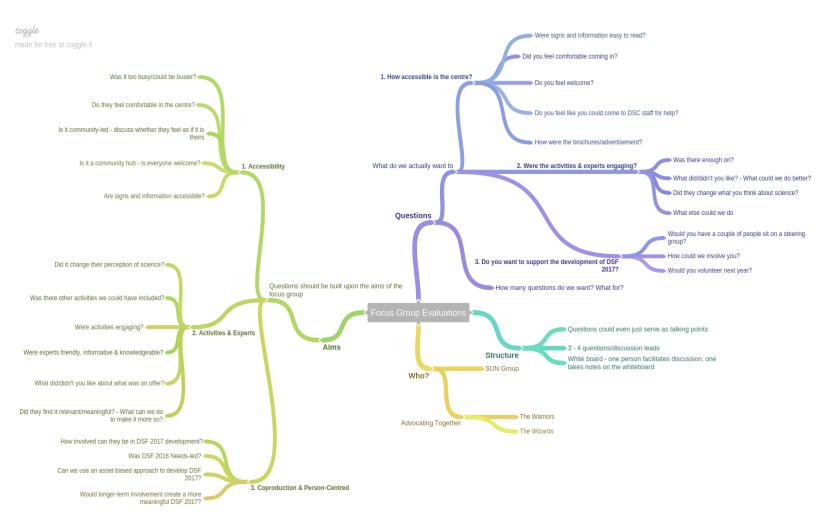
"Organising a science club at St. Fergus Primary and made some contacts and got good ideas today."

"They are all very excited about their lava lamps and try and get them working again at home."

Focus Group Discussions

The discussions were held with two local community groups who were tasked with honestly assessing the activities on offer and the accessibility of the festival itself in general. The Dundee Science Centre team began by meeting with each group to introduce themselves, the festival and some of what would be on offer. Members of each group then attended a number of different events throughout the festival before meeting again at a later date to discuss and feedback.

In order to acquire as much impartiality as possible, the focus groups had very little structure and used an informal approach to ensure both groups felt at ease and able to express themselves. Three questions were used to highlight the aims of the festival team and also to facilitate any lull in conversation should one arise. These questions were developed based upon the aims of Dundee Science Centre and the festival:



Note: The image above is the mind-mapping process by which the key discussion points were developed.

The questions used were:

- 1. How at home do you feel in Dundee Science Centre?
- 2. Did you feel comfortable with the experts and activities that were on offer?
- 3. Would you like to be part of Dundee Science Festival 2017? If so how?

Feedback on the festival was varied and in-depth, as displayed by some of the notes taken during each one.

Focus Group 1

Feedback from the group was very positive towards the festival as a whole as well as the evaluation process of having a focus group discussion. Feedback included:

"I could take in all the info – maybe because I can relate to using data in my job, it was useful and made me think about things differently, new ideas"

Community Group Leader on the 'Discovering Data' discussion group

"It's brilliant for people with mental health issues, we do have brains and people think we can't understand things, but in Dundee Science Centre you get the chance to do things that you would have thought were above your head"

Community Group Member on Dundee Science Festival as a whole

"Took part in the make a computer workshop – the facilitator explained it well and came around to help which was good so you weren't left on your own"

Community Group Member on the Gaming & Digital Technology Weekend

These findings demonstrate that the new evaluation approach enabled the Dundee Science Centre team to acquire detailed information that clarifies the successes of the festival and how meaningful it was to local people. In addition to this the focus groups also identified areas of improvement that Dundee Science Centre can use in developing future festivals.

Focus Group 2

The second focus group that took place resulted in some very powerful feedback that will continue to inform Dundee Science Centre and the development of future festivals. Feedback includes,

"The animal handling workshops were amazing, the guys delivering it were great, they gently coached me into staying in the room and then got me to hold it (the snake) overcoming my phobia! It felt amazing, I was so proud of myself"

Community Group Member on the animal handling at Animals & the Environment Weekend

"I could understand what the experts were talking about"
Community Group Member on the festival activities

"I visited Douglas Community Centre, it's my local centre but I don't really go there, if I'd known how good it was going to be I would've told all my friends with kids to come along too"

Community Group Member on the Destination Space event

The group also commented that they feel comfortable in Dundee Science Centre and felt like they could go inside and speak to staff if they were in need of help.

In addition to this, the group leader had informed the Dundee Science Centre team that the festival had had a profound effect on the lives of two group members in particular. Please find the full quote below, (sensitive information, such as names and locations, has been changed)

"The animal handling day made a huge difference to a 16 year old group member with severe communication needs. It is very difficult for her to be in group settings and on this occasion she didn't know anyone else in the group. She very rarely smiles and, I couldn't believe it when I saw her smile with the animals, I haven't seen her smile like that before! Her mum was taking pictures of her smiling because she was so excited to see her so happy. I didn't know who was happier her or her mum! She almost pushed through the crowds of people to cuddle the guide-dogs, her Mum is now thinking about getting her a dog after she saw the impact it had on her, she hopes it'll get her to come out her shell more and get her out the house. Another group member was staying in a local mental health support centre and also has communication needs, she was smiling throughout the day and again I hadn't seen her smile like that before, it was great. After seeing the impact the day had on both girls I'm planning to apply for funding to get animal handlers along for the group. The hands on nature of it, getting to stroke the animals gives some comfort." Community Group Leader on the Animals & Environment Weekend.

This quote demonstrates that Dundee Science Festival is not only engaging local people in science learning - it is leading to genuine, meaningful change in the lives of these locals as well. Therefore, in addition to successfully communicating science, the festival is also creating positive social change within local communities to the extent that it has informed some of the work that local group leaders are doing.

Funding

Dundee Science Festival took place as a result of the kind support of its funders and the commitment and enthusiasm of the many partners. The central budget supporting overall festival marketing and events was managed and administered by Dundee Science Centre.

Principal Funders

Scottish Government Dundee City Council

Additional Funders

Aberbrothock Skea Trust
Abertay University
Dundee & Angus College
Dundee Festival Trust
Edina Trust
Institute of Physics Scotland
Anonymous Trust
R J Larg Family Trust
Royal Society of Chemistry
Skills Development Scotland Ltd
Tay Charitable Trust
University of Dundee

In addition to this, there was a great deal of in-kind support from partners towards the set-up, promotion and delivery of the festival.

Dundee Science Festival would not be possible without the kind support of funders and the commitment and enthusiasm of the many partners who get involved each year. Many thanks to all who enabled the festival to take place.

Dundee Science Centre is a registered Scottish Charity (charity no. SC033272).

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