



Caithness International Science Festival 2017

Festival Report 2017

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Summary

Caithness International Science Festival was held from 11th March to 18th March 2017, this was the 15th festival organised by Science03. It was a tremendous success, and universally well received.

Caithness International Science Festival is run by Science03, a completely voluntary based charity promoting science, technology, engineering and maths in Caithness. The science festival is Science03's main event but the charity organises talks and other occasions throughout the year. The charity endeavours to give the local community opportunities to experience and learn from science professionals not normally available at our remote northern location. The main aim is to promote the understanding of science in Caithness, to motivate young people and engage them in the STEM subjects.



The Festival at a Glance

8 days: Saturday 11th March to Saturday 18th March 2017

Two strands: 1) School

- open to school pupils only
- staged at various schools in Caithness
- all sessions during school hours

2) General Public

- open to everybody
- launch event, activities, talks, exhibitions
- some events aimed at all ages, others more adult orientated
- staged at various venues around Caithness

Activities: 1) School

- 19 different activities
- 27 presenters:
 - 11 from Caithness and North Highlands
 - 14 from Scotland out with Highlands
 - 2 from outside Scotland
- 168 sessions
- 17 schools used as venues

2) General Public

- 12 different events offered over 8 days
- 9 venues
- Science Fun Day with 28 activities

Audiences: 1) School

- 1 Nursery
- 30 nursery children, 30 interactions
- all 16 Caithness Primary Schools and 2 Sutherland Primary schools
- 1974 primary pupils, 6742 interactions
- all S1-S3 in Wick High and all S1 & S2 in Thurso High
- 637 secondary pupils, 1285 interactions
- 2611 total school children
- 8057 total school interactions or "slots", i.e. counting the multiple events that each primary pupil attended

2) General Public

- 2284 people, 2284 interactions
- 1445 Family, 839 Public

Total audience of 4895 people, which is 18.5% of the population of Caithness (2011 Census)

Total of 10341 interactions.

1 Design competition, which attracted 853 entries.

Cash cost of £ 22,744

Core festival team supplied by KP Technology, an in-kind contribution of £ 13,600

Organised by Science03, a registered charity with a committee of 8 volunteers.

24 apprentices from Rolls-Royce and DSRL as well as STEM Ambassadors

69 volunteers including STEM Ambassadors from local Caithness clubs, community organisations and businesses who provided activities, presentations, workshops or displays

Events

Events for schools

The school strand of the festival consisted of invited presenters from the major science communication centres in Edinburgh, Glasgow and Aberdeen. They delivered professional, well prepared and rehearsed shows and workshops to the Caithness school children who do not have easy access to the Science Centres over 200 miles away. This is manifested by the fact that Caithness has several pockets of multiple deprivations.

The professional science communicators were complemented by many local, home-grown, presenters.

Events for public and families

Several events were organised for the general public. These consisted of demonstrations, talks, exhibitions and activities free for everybody. The exhibitions were open all week every day, other events took place in the evenings and both weekends. It is difficult to differentiate between a "public" and a "family" audience. All our events welcomed adults as well as children. We have decided to approximate the audience of each event between "public" and "family" based on the type of event. Those events which were aimed at an adult audience will be mainly "public" with a few "family" and those events to which young children were welcome are mainly "family" but as many adults without accompanying children attended too, a fair portion of the audience will be classed as "public".

Funders and Partners

The coordination and administration of the Festival is intensively supported by KP Technology Ltd, who donate a considerable amount of staff time as well as stationary and premises. KP Technology's contribution facilitates the smooth running of the festival by also supplying light and heat, printing facilities, storage and meeting space, all free of charge.

A significant portion of the cost of the festival is funded by a grant from the Scottish Government Science Festival Fund administered by the University of the Highlands and Islands, UHI. Other significant supporters are the Highland Council through its Deprived Area Fund and Spirit of Caithness: A Fourteen Community Fund administered by Foundation Scotland. IET and IMechE sponsored a public talk and one of the activities at the Science Fun Day. In addition Tesco provided all prizes, IOP and Rolls-Royce various promotional freebies. Dounreay Site Restoration Ltd, DSRL, and Rolls-Royce organised their apprentices to help with the delivery of some of the schools' workshops, this was greatly appreciated by the presenters. The organising committee would also like to thank Lord Lieutenant Anne Dunnett, patron of the festival, for her continued financial and moral support.

The Science Fun Day saw many local clubs, societies and businesses set up stalls and activities alongside the professional science communicators. It attracted a record audience of over 1000 people.

Highlife Highland have partnered with us for a few years now through the St Fergus Gallery, and this year The Nucleus: The Nuclear and Caithness Archives in Wick joined as well. Completely new in 2017 was the enlisting of two Caithness farms that opened up to the public to demonstrate technology in farming and the science of animal husbandry. Another new cooperation was established with the tourist destination of John O'Groats where visitors were encouraged to study an exhibition of tides and take part in science games and quizzes. We were also delighted to have had the Caithness Broch Project join in and hope to cooperate with them further as they are about to start their engineering and construction project of a replica broch. New local contributors to the festival were also the two speakers of the public talks, Willie Watt, General Manager of Subsea 7 and Chairman of Wick Harbour Authority, and Ken Crossan, nature photographer from Wick.

Acknowledgements

Science03 would like to thank all those who helped fund the Caithness International Science Festival 2017. Also a very special thank you to those who contributed to the events and those who gave their time and effort to ensure the smooth running of the festival.



IOP Institute of Physics



subsea 7



Rolls-Royce

Fourteen



Funders

- Scottish Government Science Festival Fund administered by the University of the Highlands and Islands
- Highland Council's Deprived Area Fund
- Spirit of Caithness: A Fourteen Community Fund administered by Foundation Scotland
- IET and IMechE

Donations

- Lord Lieutenant Anne Dunnett
- General public

Contributions In-Kind

- KP Technology Ltd
- Tesco
- IOP
- Dounreay Site Restoration Ltd, DSRL

- Rolls-Royce

Partners

- Animal Magic
- Dynamic Earth
- Glasgow Science Centre
- TechFest
- Generation Science from the Edinburgh International Science Festival
- K'next Generation
- Sphere Science
- Baseline Research
- Dr Michael Leach
- James Soper
- St Fergus Gallery, Highlife Highland
- Nucleus, Highlife Highland
- Flows to the Future, RSPB, Peatlands Partnership
- North Highland Countryside Rangers, Highland Council
- Taldale Farm, Forss
- Puffin Croft, John O'Groats
- Tourist Office, John O'Groats
- Groatie Buckie Gift Shop, John O'Groats
- Subsea 7
- Ken Crossan
- British Science Association
- Bloodhound SSC
- Acc+Ess Protocab
- Bumblebee Conservation
- Caithness Astronomy Group
- Caithness Broch Project
- Kongsberg Maritime Ltd.
- Polli:Nation Project
- Royal Society of Chemistry
- Scottish Environmental Protection Agency
- Skills Development Scotland
- Beatrice Off-shore Wind farm, SSE
- Whale and Dolphin Conservation Society
- Newton Park Primary School, Highland Council
- The Assembly Rooms, Highlife Highland

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1. Introduction

Caithness International Science Festival is an annual event organised by Science03, a local charity. This year was the 15th festival, and it took place from Saturday 11th March to Saturday 18th March 2017 at various locations around Caithness.

1.1 Aims and Objectives

The main objective of Science03 is to motivate, encourage and enthuse local people to develop an interest in science, engineering and maths. Due to the remote location of Caithness young people here do not receive opportunities to experience the professionally developed workshops, shows and exhibits available at Science Centres based in the Scottish cities. The Caithness International Science Festival addresses this by bringing science communicators to the North to deliver a comprehensive programme to Caithness youngsters. These presenters are also very much appreciated by teachers, who learn about delivering STEM subjects.

In addition to the presenters from the south a number of local STEM Ambassadors and retired teachers delivered several workshops, as did two local organisations, the North Highland Rangers and RSPB's Flows to the Future project.

The aims for this year's festival were all achieved, these were:

- To promote science, technology, engineering and maths in Caithness through the use of presenters' workshops and guest speakers;
- To engage with the wider community to promote STEM through public events;
- To allow for professional, experienced academic and industry specialists to speak to local students and public audiences, thus providing an opportunity for education, awareness, and role models for careers in STEM;
- To promote the British Science Week's aims and objectives through the Caithness International Science Festival
- To continue a programme to increase business and community links and work with the University of the Highlands & Islands, Highlife Highland, Highland Council, local farmers, the Institute of Physics, the British Science Association, the Royal Society of Chemistry, the Caithness Astronomical Society, IET, IMechE, The Peatlands Partnership, Subsea 7, KP Technology Ltd., Northland Creative Glass, both locally and where appropriately with their Scottish branches.



Dynamic Earth's Polar Regions show at Noss Primary School in Wick with pupils from Newton Park Primary school, Wick, attending.

2. Content

The festival had two strands: a Schools' Programme and a Public Programme. The Schools' Programme was delivered Monday to Friday during school hours to primary and secondary school classes. These were in the form of workshops and shows and the local schools were used as venues. The Public Programme was open to the general public and consisted of weekend and evening events aimed at families, i.e. adults as well as children and evening talks aimed primarily at adults. Also several exhibitions took place throughout the week as part of the Public Programme, and this year they were particularly designed to attract visitors to the area as well as locals.

2.1 Schools' Programme

All primary school children in Caithness experienced 3-4 shows and workshops by presenters from Caithness, Aberdeen, Edinburgh, Glasgow, and further afield. High school students in S1-S3 in Wick and S1&S2 in Thurso also participated. These events were hosted by several Caithness schools and available to pupils and their teachers only. A total of 24 local STEM Ambassadors and apprentices from Rolls-Royce and DSRL assisted with several workshops.

This year's workshops and shows were:

- 1) "Fur, Feather, Skin & Scales" by Laura Rennie from Animal Magic, Glasgow.
Laura brought her animals for the children to learn about the differences between the 5 vertebrate groups in an interactive and hands on fashion.
Presenters: 1 Workshops: 15 Pupils seen: **402** Tue - Sat, inc. Fun Day
- 2) "Extreme Environments: Polar Regions" by Dynamic Earth from Edinburgh.
In this exciting and interactive show pupils discovered the Arctic and Antarctica and compared these two frozen worlds.
Presenters: 2 Shows: 12 Pupils seen: **975** Tue - Sat, inc. Fun Day
- 3) "Bodyworks: The Vitals" by Glasgow Science Centre.
In this live science show pupils discovered the workings of essential organs in the human body.
Presenters: 2 Shows: 10 Pupils seen: **1136** Tue - Sat, inc. Fun Day
- 4) "K'nex Dinosaurs" by TechFest from Aberdeen.
This Kid K'nex workshop for younger children introduced them to the fascinating world of engineering design. They developed their construction skills and built up their creative confidence by producing their own unique model.
Presenters: 1 Workshops: 12 Pupils seen: **363** Tue - Fri
- 5) "Bizarre Bones" by TechFest from Aberdeen.
Experiments and activities for kids to find answers to such questions as: what part of your body is stronger than steel and harder than granite? Pupils discovered many incredible facts about human and animal skeletons.
Presenters: 1 Workshops: 12 Pupils seen: **337** Tue - Fri
- 6) "Gorilla Workshop" by Dr Michael Leach.
Dr Michael Leach is a full time wildlife author and photographer. He has travelled to all 7 continents and worked with many of the world's most charismatic animals. Using his experience living with mountain gorillas of Rwanda, Michael did a presentation on how to walk like, think like and speak like a gorilla.
Presenters: 1 Shows: 11 Pupils seen: **799** Tue - Sat, inc. Fun Day
- 7) "Your beautiful, biased brain" by James Soper, Glasgow
This new show aimed at older pupils explored the history of psychology and the brain and how it affects our behaviour.
Presenters: 1 Shows: 11 Pupils seen: **1198** Tue - Sat, inc. Fun Day

- 8) "Little Giants" by Generation Science, Edinburgh International Science Festival.
This highly interactive show had Buzzy, the giant honeybee, lead pupils into the wonderful world of bees.
Presenters: 2 Shows: 12 Pupils seen: **356** Tue - Fri
- 9) "Body Builders" by Generation Science, Edinburgh International Science Festival.
Dr Watson and Nurse Treat It Better illustrated common ailments and how to stay healthy in this funny, fast-paced show.
Presenters: 2 Shows: 9 Pupils seen: **521** Tue - Fri
- 10) "Science Circus Workshop" by Scotty Poleykett.
Scotty taught pupils about gravity, tension, friction, pulls, pushes & twists by having them play with diabolos, wheels, plates etc.
Presenters: 1 Workshops: 12 Pupils seen: **372** Tue - Sat, inc. Fun Day
- 11) "Crash Test Buggies" by Ann Larkham, K'next Generation, Aberdeen
Pupils designed and built a K'NEX vehicle which had to keep its cargo safe when crashing.
Presenters: 1 Workshops: 3 Pupils seen: **103** Wed - Fri
- 12) "Programmable Robots" by Ann Larkham from K'next Generation, Aberdeen.
Pupils built a robot which they then programmed to take part in a series of increasingly complex challenges.
Presenters: 1 Workshops: 6 Pupils seen: **178** Wed - Fri
- 13) "Circuits" and
- 14) "Solar Circuits" by Pat Duchart from Sphere Science, Glasgow.
Workshops of electrical activities to investigate circuits, their components, conductors and insulators.
Presenters: 1 Workshops: 12 Pupils seen: **333** Tue - Fri
- 15) "Bog Bodies" by Flows to the Future, from RSPB Forsinard, North Sutherland.
Children learned about how bodies, butter and other bits and bobs can be preserved in peat. The children made Bog Boxes, where they were invited to 'preserve' things inside the box, and then decorated the lid with things found on the surface.
Presenters: 2 Workshops: 11 Pupils seen: **338** Tue - Fri
- 16) "Storytelling and Science" by Baseline Research, Caithness.
An interactive workshop designed to engage and inspire the next generation of scientists and storytellers.
Presenters: 2 Workshops: 12 Pupils seen: **362** Tue - Fri
- 17) "The science behind sports" by Yetunde Adediran, IET/IMechE Caithness.
This coding workshop introduced pupils to electronics simulation with Autodesk and Arduino.
Presenters: 2 Workshops: 5 Pupils seen: **130** Wed
- 18) "Bloodhound Model Rocket Cars" by John Blacklock, IET/IMechE Caithness.
Teams of schoolchildren built and raced model rocket cars across their playgrounds.
Presenters: 2 Workshops: 2 Pupils seen: **50** Mon
- 19) "Bats" by North Highland Countryside Rangers.
Pupils learn through activities delivered at 5 different bases about these "midge munchers", e.g. how they navigate at night.
Presenters: 5 Workshops: 1 Pupils seen: **104** Tue

Design Competition

All primary school children in Caithness and North Sutherland were encouraged to take part in our Design Competition. There were 3 categories for the different age groups. This year the youngest were asked to take photographs, so their entries were submitted digitally. Participants in the older categories sent in their entry on an A4 or A3 sheet of paper.

This competition raises awareness of the science festival among the children, their families and schools; it is an effective way of promotion. The winners together with their families and teachers are invited to the Launch Event where they will receive their prizes. A large proportion of the entries were displayed at the St Fergus Gallery and the Nucleus during festival week, and the winning entries were displayed at every public event.

The categories this year were:

1) P1 & P2 : Photograph of Science in Caithness.

Children were instructed to take a photograph of anything that they think fits the theme of "Science in Caithness". Photographs could be taken outside or inside, at home or at school. Children had to think of a caption to accompany and explain the photograph. It was to be at least one word long and maximum one sentence long, not a story.

2) P3 & P4 : Poster promoting Recycling and Reuse

Children were to submit a picture encouraging people to recycle their waste or reuse their old things. Entries had to be drawings, although some textual explanations and labels were permitted.

3) P5 & P6 & P7 : Poster for Caithness International Science Festival

Children were asked to compose a poster advertising the Caithness International Science Festival. Entries had to be drawings with a little bit of text, such as a heading or slogan.

Total entries: **853**



Exhibitions of entries to the Design Competition at Nucleus.

2.2 Public Programme

A series of events were organised which were open to the general public. These included some new partnerships with local farms, the new archive in Wick and the tourist destination of John O'Groats. All events were very successful and well attended. The festival week culminated in the Science Fun Day on Saturday which attracted a record audience of over 1000.

- 1) DESIGN COMPETITION Nucleus,Wick Sat - Sat
Exhibitions of entries to the Design Competition from P1-P7 children in Caithness.
- 2) DESIGN COMPETITION St Fergus Gallery Sat - Sat
Exhibitions of entries to the Design Competition from P1-P7 children in Caithness.
A drop in "Experiments with Construction" workshop was available to the public during the festival where visitors used giant building blocks to build structures.
- 3) TREMENDOUS TIDES Groatie Buckie Gift Shop, John O'Groats Sat - Sat
Exhibition of items and information relating to tides, using the nearby Pentland Firth as an example.
- 4) SCIENCE ACTIVITIES Tourist Office, John O'Groats Sat - Sat
Quizzes and games for young children.
- 5) ANIMAL HUSBANDRY Puffin Croft, John O'Groats Sat & Sun
Visitors to the farm learned about the science of breeding and caring of farm animals
- 6) TECHNOLOGY IN FARMING Taldale Farm, Forss Sun
Demonstrations of the use of technology in modern farming.
- 7) FESTIVAL LAUNCH Newton Park Primary School, Wick Tue
Awards for design competition winners and samples of what is on offer during festival week: Animal Magic, James Soper, Circus Workshop, Dynamic Earth, Bodyworks, SSC Bloodhound, K'nex
- 8) ENERGY IN CAITHNESS Mackays Hotel, Wick Wed
Talk by Willie Watt, General Manager at Subsea 7 & Chairman of Wick Harbour Authority.
Energy Projects in Caithness - oil and gas work delivered from Wester, offshore wind - BOWL project, Meygen in the Firth and Dounreay/Vulcan decommissioning.
- 9) AN AMAZING ADVENTURE Mackays Hotel, Wick Fri
Illustrated talk by Ken Crossan about his daily observations of a grey seal pup which was born on the Caithness coast.
- 10) SCIENCE FUN DAY Assembly Rooms, Wick Sat
Various activities, workshops and displays from near and far. Science for everyone.
- 11) WILDLIFE PHOTOGRAPHY Assembly Rooms, Wick Sat
Wildlife author and photographer Dr Michael Leach's presentation was based on his own experiences travelling to all 7 continents of the world and working with animals, including living with mountain gorillas.
- 12) YOUR BEAUTIFUL, BIASED BRAIN Assembly Rooms, Wick Sat
James Soper's presentation explored the history of psychology and the brain and how it affects our behaviour.



James Soper

- | | |
|--|---------------|
| 12) K'NEX | Volunteers: 3 |
| Challenge to build a cart capable of moving a load. | |
| 13) Nucleus: The Nuclear and Caithness Archive | Volunteers: 2 |
| Display of interesting items, fuel rods and historic photographs from Dounreay & other sites.
Two laptops films and slides from both archives. | |
| 14) North Highland Countryside Rangers | Volunteers: 1 |
| Batty about bats | |
| 15) Polli:Nation Project | Volunteers: 1 |
| Display on what the Polli:Nation project is about focussing on the activities of some of the Caithness schools taking place and promotion of the pollinators survey everyone is invited to be part of. | |
| 16) Royal Society of Chemistry | Volunteers: 6 |
| Chemistry of Curry - guess the smell activity relating to compounds found in curry spices.
Colours in food - chromatography using black food colouring pens. | |
| 17) Scottish Environmental Protection Agency | Volunteers: 2 |
| Pollution detectives. | |
| 18) Skills Development Scotland, SDS | Volunteers: 1 |
| Lego Education resources to inspire careers in STEM | |
| 19) SSE – Beatrice Off-shore Wind farm | Volunteers: 2 |
| Technology of modern windmills, models. | |
| 20) Whale and Dolphin Conservation Society | Volunteers: 4 |
| WDCS Info, floor game. | |

Some of the professional science communicators who had been doing workshops during the school week stayed on for Saturday too:

- | | | |
|--|---------------|---------------|
| 1) Animal Magic | Presenters: 1 | Volunteers: 1 |
| Fur, Feather, Skin & Scales. Hands on, drop in. | | |
| 2) Dynamic Earth | Presenters: 2 | |
| Polar Regions, activities. | | |
| 3) Glasgow Science Centre | Presenters: 2 | |
| Body works on tour. | | |
| 4) Scotty's Science Circus | Presenters: 1 | |
| Juggling | | |
| 5) Sphere Science | Presenters: 1 | Volunteers: 3 |
| Lots of different activities: building, floating, loading, rolling, wind | | |
| 6) Dr. Michael Leach | Presenters: 1 | |
| 7) James Soper | Presenters: 1 | |

A cafe was set up by Wick Youth Club, which provided sandwiches, home baking, coffee & tea and soft drinks; it was staffed by 4 volunteers.

3. Audience Participation

3.1 Audience Numbers

The total number of people taking part in the 2017 festival are detailed in the following tables. The pupil figures are exact. None of the events open to the general public was ticketed, so the numbers were obtained by either performing a head count or by having visitors sign a visitor book.

	Total	%
School	2611	53%
Family	1445	30%
Public	839	17%
Total	4895	100%

Total number of people taking part in 2017 divided into the different audience groups.

The general public audience numbers are difficult to divide between Family and Public as all the events were open to everybody, and some children came to the events aimed at an adult audience and many adults came without children to events such as the Fun Day and the Launch Event. The following table illustrates how the numbers were calculated.

Event	Location	Tot	Proportion	
			Public : Family	Public Family
Animal Husbandry	Puffin Croft	146	0 : 1	0 146
Technology in Farming	Taldale Farm, Forss	28	0.5 : 0.5	14 14
Tremendous Tides	Groatie Buckie Shop	356	1 : 0	356 0
Science quizzes & games	Tourist Office	345	0 : 1	0 345
Design comp. exhibition	Nucleus	40	1 : 0	40 0
Design comp. exhibition & construction activity	St Fergus Gallery	37	0.75 : 0.25	28 9
Festival Launch	Newton Park	230	0.33 : 0.667	77 153
Energy in Caithness	Mackays Hotel	47	:	45 2
An Amazing Adventure	Mackays Hotel	38	0.67 : 0.33	25 13
Science Fun Day	Assembly Rooms	1017	0.25 : 0.75	254 763
		2284		839 1445

Calculation of audience numbers at events open to general public.

This year's festival's audience numbers compared to past festivals:

	2017	2016	2015	2014	2013	Nr	%
School	2611	2796	2760	2630	2360	-185	-7%
Family	1445	907	640	730	450	538	59%
Public	839	370	250	852	811	469	127%
Total	4895	4073	3650	4212	3621	822	20%

Comparison of audience numbers over the years and details of increase from 2016 to 2017.

An amazing 18.5 % of the population of Caithness took part in this year's festival. The total audience figure increased by 20% although the number of pupils in the participating schools decreased by 7% from 2016. Considerable effort has been put into engaging more of the general public this year. This has been successful as both the Family and Public audiences increased substantially; in fact the general public audience figure doubled from 2016 to 2017.

(Caithness has a total population of 26,486 according to the 2011 Census figures from Highland Council's document "Population Change in Caithness and Sutherland 2001 to 2011, http://www.highland.gov.uk/download/meetings/id/1341/item_4_population_change_in_caithness_and_sutherland).

A record number of events were offered this year, to celebrate the 15th festival. Each pupil in the schools' programme took part in 3 to 4 workshops and shows. The total number of interactions or 'slots' was 8057 for pupils which was nearly 1500 more than in 2016.

(Nr = increase from 2016 to 2017)

	2017	2016	2015	2014
Schools	8057	6581	5137	5424
Family	1445	907	640	710
Public	839	370	250	852
Total	10341	7858	6027	6986

	Nr	%
School	1476	22%
Family	538	28%
Public	469	52%
Total increase:	1945	30%

Comparison of total interaction numbers over the years and details of increase from 2016 to 2017.

3.2 Schools

All 16 Caithness Primary Schools, both High Schools and two North Sutherland Primary School participated in this year's festival.

The total number of Primary pupils involved was 1944, plus 30 Nursery children.

The total number of Secondary pupils involved was 637.

The schools were offered 168 sessions which resulted in 8057 total interactions over five school days. This is an increase of 22% from the number of interaction in 2016.

Participating schools			
1	Bower	P1-7	36
2	Canisbay	P1-7	41
3	Castletown	P1-7	119
4	Crossroads	P1-7	21
5	Dunbeath	P1-7	24
6	Halkirk	P1-7	138
7	Keiss	P1-7	52
8	Lybster	P1-7	92
9	Melvich	P1-7	23
10	Miller Academy	P1-7	206
11	Mount Pleasant	P1-7	187
12	Newton Park	P1-7	332
	Nursery (4 yr olds)		30
13	Noss	P1-7	319
14	Pennyland	P1-7	198
15	Reay	P1-7	46
16	Thrumster	P1-7	34
17	Watten	P1-7	49
18	Farr	P1-7	27
19	Wick High School	S1	118
		S2	140
		S3	119
20	Thurso High School	S1	130
		S2	130
Total All Pupils			2611

3.3 Venues

In the schools programme various local schools were used as venues:

Schools used as venues		
1	Canisbay	Primary
2	Castletown	Primary
3	Halkirk	Primary
4	Keiss	Primary
5	Lybster	Primary
6	Melvich	Primary
7	Miller	Primary
8	Mount Pleasant	Primary
9	Newton Park	Primary
10	Noss	Primary
11	Pennyland	Primary
12	Reay	Primary
13	Watten	Primary
14	Thurso High	Secondary
15	Wick High	Secondary

Events for the general public were staged at the following venues

Event	Location
Animal Husbandry	Puffin Croft, John O'Groats
Technology in Farming	Taldale Farm, Forss
Tremendous Tides	Groatie Buckie Shop, John O'Groats
Science quizzes & games	Tourist Office, John O'Groats
Design comp. exhibition	Nucleus Archive, Wick
Design comp. exhibition & construction activity	St Fergus Gallery, Wick
Festival Launch	Newton Park Primary, Wick
Energy in Caithness	Mackays Hotel, Wick
An Amazing Adventure	Mackays Hotel, Wick
Science Fun Day	Assembly Rooms, Wick

4 Economic Impact

4.1 Total Cost of Staging Festival

The major cost of staging the Caithness International Science Festival is presenter fees. It is important to provide opportunities for local people to experience professional science communicators who mostly reside in the Science Centres of the Scottish cities. Bringing them up to the far north is much appreciated by all.

Presenter fees & travel	£19,296
Presenter accommodation	£2,276
Promotion	£300
Misc. (venue hire, prizes, catering)	£873
Total 2017 cost	£22,744

Table of total costs of 2017 festival.

Income

The target of raising 30% of funding from sources other than the Scottish Government was well exceeded. We were delighted to collect over £300 in donations from the public on the Fun Day, and indication of the appreciation of this event.

Scottish Government Grant, received	£5,000
Scottish Government Grant, outstanding	£5,000
Spirit of Caithness (Foundation Scotland)	£2,000
Anne Dunnnett donation	£100
Public Donations	£387
Highland Council Deprived Area Fund	£5,000
Total income	£17,487

Table of total income for 2017 festival,

To celebrate the 15th anniversary of the festival more events than ever were laid on, so to cover the increased cost £5,257.00 of Science03 reserve funds were used.

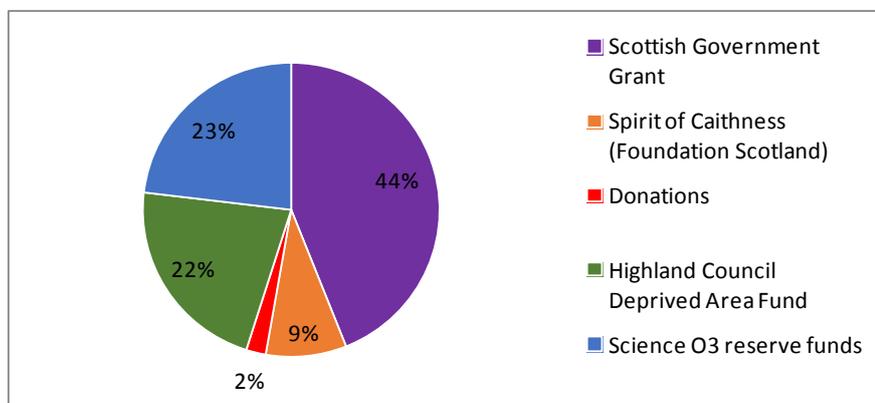


Chart showing proportions of funding sources.

Additional contributions or income in-kind

In addition to the income detailed above Tesco donated prizes for 1st, 2nd and 3rd in all the design competition categories, this is estimated to be worth approximately £200. The local branches of IET and IMechE contributed by paying for the venue hire and teas& coffees for Willie Watt's talk as well as the fee for one presenter at the Fun Day. KP Technology provided for the Festival Administrator (0.15 FTE), Festival Secretary (0.15 FTE) and Chairman to an approximate total of over 500 hrs of staff time, an estimate of these 3 people's salaries and NI are shown below. In addition KP Technology contributes office space, IT services, stationary, consumables etc. free of charge.

Contributor	Item	Cost
Tesco, Wick	Design competition prizes	£ 200.00
KP Technology Ltd	Staff time (salaries, NI)	£ 11,560.00
KP Technology Ltd	Stationery, consumables, office space etc.	£ 2,040.00
IET&IMechE	Venue rental & refreshments	£ 190.00
IET&IMechE	1 presenter for Fun Day	£ 200.00
	Total	£ 14,190.00

Additional and in-kind contributions.

If these contributions in-kind are taken into account then the total cost of the festival is £ 36,934 and the total income £ 31,677.

4.2 Total Number of Paid Staff

ScienceO3 has no paid staff. The festival is organised with the help of KP Technology employees who are also members of the organising committee. KP Technology donates their time free of charge.

4.3 Total Number of Volunteers

The organising committee consists of 8 members.

24 apprentices from Rolls-Royce and DSRL as well as STEM Ambassadors assisted invited presenters in delivering their workshops.

69 volunteers including some STEM Ambassadors manned stalls and delivered activities at the Science Fun Day.

More volunteers helped with judging the design competition, preparing promotional materials, compiling information booklets, etc.

5. Evaluation

5.1 Measures of Success

The ScienceO3 committee has benefited over the past 18 months from the introduction of new members who suggested rebalancing our festival activities by initiating an expanded program of activities for the Family and Public, see pages 8-10. As a consequence, the year-on-year growth in audience figures for these groups was +59% and +127% respectively. Currently the relative audience share of Family is 30% and Public 17%. The former figure is +10% above the stated target of 20% and the latter figure -3%. As pointed out on page 11 there is a margin of error in allocating audience numbers in this category of at least 2% in this category. So, with a relative share of 50% of audience, we claim to have succeeded in achieving or surpassing, our target figures in these categories.

In 2017 our total audience figure grew 20% (+822 persons) to 4895. This is a new overall attendance record as was the audience attending the Science Fun Day which exceeded 1000 persons for the first time. We achieved these increases while maintaining our focus on the schools program, where the number of interactions rose from 6581 (2016) to 8057, a net growth of +22% with 2611 pupils taking part. On page 1 of this report we detail that we achieve all the aims set out in our application, this includes promotion of STEM, use of professional, experienced academics and industry specialists to speak to local audience, to Promote British Science Week and to increase business and community links.

It would be remiss not to point out inherent risks in running this festival which is clearly a partnership between the Scottish Government and the local organising committee. Due to a very late call for proposals in Dec 2016 and subsequent administrative delays, Scottish Government funding was confirmed only 6 weeks prior to the Festival Launch in March 2017. However presenter bookings and thus financial liability is taken made 7-8 months earlier. This places an unneeded burden of risk onto the shoulders of the organising committee and we look to the Scottish Government to substantially improve on the timing of the call for proposal, feedback and confirmation of award as has been the case in previous years. The local organising committee will also seek to mitigate risk by initiating grant requests to potential funders such as BOWL.

In Jan 2017 Festival Chair Prof. Iain Baikie was awarded an MBE for his contribution "To science education in Caithness by way of the Caithness International Science Festival".

The organising committee are already planning the 2018 festival, which will be our 16th consecutive festival and we plan on maintaining and expanding the new initiatives to continue to develop this high-quality and thoroughly professional festival of science, technology engineering and mathematics.

5.2 Evaluation Comments

Feedback forms were emailed to all school classes at the end of the festival week. There were different forms for teachers and pupils.

The teachers were asked to score from Excellent (10) to Poor (1) the workshop/show which their class had attended as well as comment on its highlights, whether it was pitched at the right level, how the Science Festival benefits them and which topics they would like covered in the future. 75 teachers responded, with the average of all scores being 8.2

The pupils were asked to rate the workshop/show from Excellent (10) to Poor (1), describe their favourite part of it, what they learned and what they would like to see at next year's festival. 209 pupil feedback forms were returned and the average of all scores was 8.0. Some classes returned only one pupil feedback form for the whole class, rather than have each pupil fill in a form.

Quotes from Schools

Teachers:

One of the highlights of the workshop was seeing how included my pupil with Autistic Spectrum Disorder felt.

I am going into my loft tonight to search for a set of K'nex to use next week in class.

It is good to work with other schools.

Great buzz around the school, lots of shows

This show (Science of the Circus: Forces) provided a great way of introducing forces to the children.

I believe the Science Festival is a wonderful opportunity for the children to experience science and get excited about it from a young age and having experts in their field come to share this with the children really helps achieve this.

The overall benefits of the Science Festival are: The expertise and presentation, as well as the wealth of resources, to provide an experience of ever-changing workshops and shows. Thank you The Science Festival gives children a 'whistle stop' experience of lots of science topics which can then be developed further

The overall benefits of the Science Festival are: Experts bringing resources that we wouldn't be able to get, experts' knowledge.

The Science Festival is always super and we look forward to it every year. Having experts on different topics is invaluable.

The Science Festival is a super way to get children interested in the many different aspects of science.

The children learned lots and engaged with some unusual topics.

The Science Festival makes science fun - it gives the children a week of exciting events and activities and gets them really interested.

The Science Festival provides us with experiences we cannot access due to our location.

Fabulous presenters who bring science to life.

Always such knowledgeable presenters who deliver their sessions in such a fun, interactive way.

The Science Festival allows children to have hands on experiences and enables teachers to see different ways of teaching science.

The festival brings a range of equipment and experiences which are not always available or that staff have the confidence to do.

Thank you again for bringing some excellent shows to the Caithness schools.

Having specialists sharing science is essential

It is great for the children to have the opportunity to learn from experts. As a teacher who is not confident teaching science, I think it is very beneficial for my pupils to participate in these activities. Thank you very much for providing our pupils with such valuable learning experiences.

It is great to have a week when the focus is on science, with the children able to participate in fun and educational activities. Thank you for all the work and preparation you put in to make this such a successful event each year.

Pupils:

Newton Park P6: The class summed up the Science Festival as "Awesome, epic, educational fun!"

Quotes from Public Events

Loved your talk.

It really was an amazing adventure!

All the pictures and information was fantastic.

We loved the information, pictures and adventures of the first days of a pup seal.

Quotes from Science Fun Day



The image shows a screenshot of social media comments from the Caithness Science Festival. The comments are from various users, including Kenneth McElroy, Karen Kc, David Young, Vickie Younger, Fiona McPhee, Claire Henderson, and Jana Emburey. Each comment includes a profile picture, the user's name, the text of the comment, and interaction options like 'Like', 'Reply', and 'Message'. The comments are dated from 18 March at 18:45 to 23:05.

Kenneth McElroy Thanks from Caithness Broch Project. Enjoyed ourselves. Well done to all those involved!
Like · Reply · Message · 1 · 18 March at 18:45

Karen Kc Had a brilliant day at festival working alongside Janine and Julianne was great fun. Well Done Everyone for organising such a great event 🙌😊
Like · Reply · Message · 1 · 18 March at 19:40

David Young Thank you for organising such a brilliant day out. Our 3 kids really enjoyed it and we all learned something new. Our middle one had to see James Soper's show for the 3rd time as she loved it soo much! Michael Leach's show was fantastic. The littlest one loved the knex and lego. All 3 kids were hands on with all the displays/activities on in the main hall and the circus skills and animals ...the catering crew did a fab job refuelling us too!
Like · Reply · Message · 1 · 18 March at 19:51

Vickie Younger Fab afternoon
Like · Reply · Message · 1 · 18 March at 20:28

Fiona McPhee We really enjoyed it, thank you
Like · Reply · Message · 18 March at 22:51

Claire Henderson Brilliant Caithness Science Festival week again. Amazing opportunities for children at school throughout the week, interesting talk and slideshow last night and brilliant open day today. Keep up all your hard work! Thank you.
Like · Reply · Message · 18 March at 22:59

Jana Emburey Fantastic event! Thank you 😊
Like · Reply · Message · 18 March at 23:05

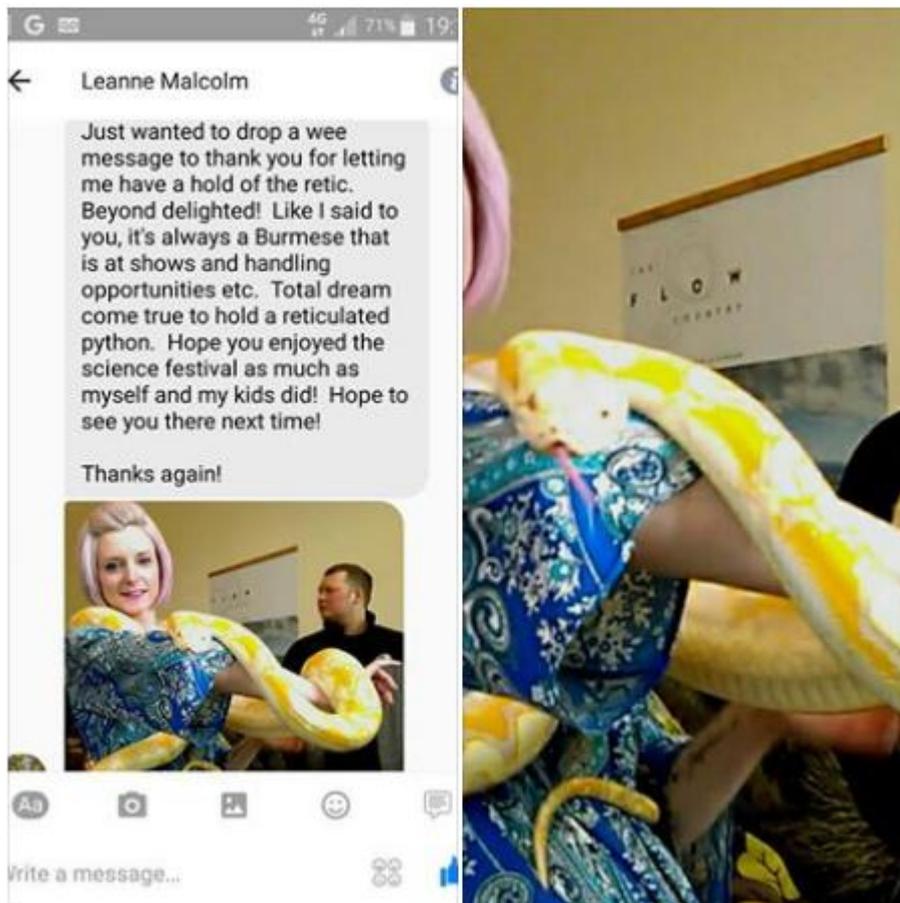
Thank you for inviting me to take part in the Festival; I had a great time and received great feedback from the pupils and teachers.

The three STEM Ambassadors, Adam, Mark and Conor, were absolutely brilliant, thank you.

Do you feed back to Dounreay? If you do, please tell them how impressed I was with all 3 of them. Thanks again for giving me the opportunity to be part of the Festival. I hope I will be able to be involved again next year.

Kind regards,
Ann

*(Ann Larkham from K'Next Generation.
Presented K'nex workshops to pupils for 3 days, 3 per day.)*



Thank you for a fabulous Saturday – I have never attended such an amazing festival, I am very much looking forward to making plans for next year.

Well done on all your hard work and the hard work of your team.

Have a rest full week.

Garance (Garance Warburton from Nucleus. They had a stand at the Fun Day on Saturday.)

Thank you so much for having me back again this year and for making John so welcome. It really is the highlight of my working year! Let me know if you'd like me back next year.

Take care,

Laura, John & the animals. xx

(Laura Rennie from Animal Magic, Glasgow. 15 workshops over 4 days for pupils, and Fun Day on Saturday.)