

# Fife Science Festival 2011

## Report



Prepared by Dundee Science Centre

DUNDEE SCIENCE CENTRE  
 **sensation**

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## 1) Executive Summary

Fife Science Festival 2011 provided 17 events and programmes in 13 venues across Fife, ranging from St Andrews and Anstruther to Rosyth and Glenrothes. The festival took place thanks to the partnership between 14 organisations from the fields of education, local authority, higher education, further education, museums, heritage and science.

In total, 2544 people – mainly Fife residents – took part in activities ranging from family fun days to lectures and talks, and including schools programmes for both primary and secondary schools.

Evaluation shows a very high level of enjoyment, with participants gaining new knowledge and understanding, very much enjoying the experience, and being very likely to recommend the festival to others. Moreover, many participants demonstrate a desire for ‘more of the same’, showing a desire for more science learning experiences of this type, and a desire to see Fife Science Festival return in future.

Feedback shows that participants heard about the festival through varied media, with the festival leaflet, word-of-mouth, and press coverage particularly successful. Participants visiting from outside Fife shows that awareness raising also has success in Dundee and Edinburgh.

Comments from participants include:

*“It was amazing!”*

*“Children were fascinated”*

*“Excellent. Best science event we have been to”*

*“Just keep doing it”*

*“I really liked the enthusiasm of the demonstrators and the message that science is fun!”*

*“So, so fun”*

## 2) Festival Programme

12 <sup>th</sup> March	Science Discovery Day  The Under-Water World and Climate Change
14 <sup>th</sup> March	The Battle of the Sexes
14 <sup>th</sup> -18 <sup>th</sup> March	Balcurvie Science Fair  The Renewables Challenge  Words, Wires and Waves to the World Wide Web: Workshops  Building a Cathedral
15 <sup>th</sup> March	Skills for the Future
15 <sup>th</sup> and 16 <sup>th</sup> March	Medieval Construction Science Show (Primary Schools)
17 <sup>th</sup> March	“The Edge: Science & Technology ‘Circuit Training’ Challenge  Cafe Science: ‘City Critters: Why should we care?’
18 <sup>th</sup> March	Scottish Fisheries Museum schools workshops
19 <sup>th</sup> March	Bell Pettigrew Museum Open Day  Medieval Construction Science Show (Public)  Sci-Art Experience!  Science in the Supermarket
20 <sup>th</sup> March	Dundee Science Centre-Sensation: Free Family Fun for Fife!

## **Acknowledgements**

Led by Dundee Science Centre, Fife Science Festival could not have been possible without the following partners:

Adam Smith College

Balcurvie Primary School

Carnegie College

Fife Council

Fife Free Press, including Fife Herald, St Andrews Citizen, East Fife Mail, Glenrothes Gazette and Fife Free Press

Historic Scotland

The Hydrogen Office

Museum of Communication

PERG: Pelagic Ecology Research Group

The Scottish Fisheries Museum

Scottish Government

University of Dundee

University of St Andrews

The major funder was the Scottish Government. Fife Free Press kindly provided media partnership.

### **3) Aims and Ethos**

Fife Science Festival shares the aims and ethos of Dundee Science Centre, aiming to achieve the science centre's vision of a culture of curiosity, confidence and engagement with science, for the whole community.

The festival aims to enhance cultural activity in Fife through expanding science engagement activities across the region. As the local science centre for Tayside and North East Scotland, Dundee Science Centre aims to help bring enjoyable, engaging, relevant, accessible science learning experiences to whole community. By facilitating the festival we also aim to bring together partner organisations from across Fife, to enhance and complement the many strengths of Fife's current science and cultural community.

Fife Science Festival aims to:

- celebrate local science and innovation in the Kingdom of Fife
- establish science as an aspect of culture, alongside arts and heritage
- widen access to science learning by offering events across the region, for all ages

#### 4) Programme Content

The festival programme offered a range of events at a range of venues, offering science to all ages and backgrounds, and linking science with arts and heritage.

##### *Engaging primary schools*

- The **Renewables Challenge** taught primary school pupils about renewable technologies and the future of energy
- **'Words, Wires and Waves'** taught pupils about how engineering enables us to communicate with one another
- The **Medieval Construction Show** demonstrated how science and technology enabled people living in medieval times to build castles and construct fortresses

##### *Inspiring secondary school pupils*

- Carnegie College's **'The Edge - Science and Technology Circuit Training Challenge'** gave pupils the chance to work with energy engineering specialists and apprentices

##### *Innovative events for adults*

- **'The Battle of the Sexes'** explored sex differences in the natural world
- **Cafe Science 'City Critters: Why should we Care?'** explored why diversity is important in our cities

##### *Enjoyment for the whole family, together*

- The **Science Discovery Day** at the University of St Andrews included fun, hands-on activities run by various departments in the university, providing a full, fun day out for the whole family
- **'Free Family Fun for Fife' at Dundee Science Centre** allowed Fife families to enjoy all the activities the centre had to offer, completely free of charge
- **Bell Pettigrew Museum Open Day** gave visitors the rare opportunity to look around the university's Victorian natural history collection

##### *Linking arts and science*

- Adam Smith College's **'Sci-Art Experience!'** helped visitors discover science in new and creative ways

##### *Insight into research and future technologies*

- Adam Smith College's **'Skills for the Future'** event allowed the public the unique opportunity to see how the scientists and engineers of the future are trained

Venues across the region included:

Aberdour Castle

Adam Smith College

Adam Smith College Future Skills Centre

Balcurvie Primary School, Windygates

Bell Pettigrew Museum, University of St Andrews

Carnegie College: Whitlock Energy Collaboration Centre, Rosyth

Dundee Science Centre

Morrison's supermarket, Glenrothes

Museum of Communication, Burntisland

Primary schools across Fife

Scottish Fisheries Museum, Anstruther

St Andrews Cathedral

Tayport Community Cafe

University of St Andrews

## **5) Audience**

In the first year of operating a broad programme of events, incorporating events for schools, families and adults, Fife Science Festival reached a wide audience totalling 2544 (1018 adults and 1526 children). Most visitors came from Fife itself, though for some events, visitors had travelled from Dundee and Edinburgh.

The majority of visitors were likely to have heard about the festival through the festival leaflet or via word of mouth, although local press coverage, web presence and social media were also effective.

Attendance levels at individual events are detailed in the final section of this report.

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

## 6) Economic Impact

The festival budget, supported by the Scottish Government, contributed toward both event running costs and core festival administration. In both areas, a great amount of value was added by in-kind support of the many partners.

### Expenditure

	Recipient	Cost
<u>Core Festival Functions</u>		
PR	External PR company managed by Dundee Science Centre	£600.00
Festival management: programme, PR and marketing coordination; secondment of part-time administration assistant, travel and other expenses	Dundee Science Centre	£1840.70
Marketing: print, design, photography and website hosting	Managed by Dundee Science Centre	£1604.30
Brochure and poster distribution	Managed by Dundee Science Centre Managed by Dundee Science Centre	£955.00
<u>Event Support</u>		
Contribution towards 'The Edge' event	Carnegie College	£1000.00
Contribution towards 'Skills for the Future' and 'Sci-Art Experience' events	Adam Smith	£1000.00
Contribution towards 'Science Discovery Day' event	University of St Andrews	£1000.00
Contribution towards 'The Renewables Challenge' event	Hydrogen Office	£200.00
Contribution towards 'The Underwater World...' event	Scottish Oceans Institute (PERG)	£200.00
Contribution towards Balcurvie Science Fair event	Balcurvie Primary School	£200.00
Contribution towards Science in the Supermarket	Dundee Science Centre	£500.00
Contribution towards 'Words, Wires and Waves...' school workshops	Museum of Communication	£200.00
Contribution towards schools workshops	Scottish Fisheries Museum	£200.00
Contribution to allow free admission to science centre	Dundee Science Centre	£500.00
	<b>Total</b>	<b>£10,000</b>

Contributions toward event costs leveraged a great amount of in-kind support, and all partners contributed very valuable input in this way.

Media partnership provided by Fife Press Press contributed very valuable awareness raising support.

In-kind support leveraged by the festival budget is estimated at a value of over £20,000. Dundee Science Centre's in-kind support for the festival, including hosting, overheads, line management and direction, is valued at over £3,000.

In total, over 120 staff and volunteers contributed their time and efforts to the festival, largely as in-kind support provided by partner organisations.

## 7) Evaluation

### Methodology

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 enables outcomes to be mapped against the Generic Learning Outcomes (GLOs).

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



## Overall Festival Results

Outcomes show that enjoyment was the highest scoring outcome across the whole festival, with high enjoyment in all events. A great majority “strongly agreed” with the statement, “*I enjoyed this event*”, with a very high average outcome of 1.17. A large proportion of participants also “strongly agreed” with the statement “*I learned something new*”, with a high average outcome of 1.20, suggesting that learning and enjoyment went hand-in-hand for festival visitors. High satisfaction is reflected in the likelihood of visitors to recommend Fife Science Festival events to others (1.24).

Overall, whole-festival average scores were as follows:

Statement	Average Score across the festival (in which 1=strongly agree and 5= strongly disagree)
<i>“I enjoyed this event”</i>	<b>1.17</b>
<i>“I learned something new”</i>	<b>1.20</b>
<i>“I feel that science is more interesting than I did before this event”</i>	<b>1.64</b>
<i>“I would trust science festivals to portray science more honestly than the media or government”</i>	<b>1.46</b>
<i>“This event has made me want to find out more about science.”</i>	<b>1.48</b>
<i>“This event has made me feel that science is relevant to my life”</i>	<b>1.56</b>
<i>“I feel today has made me a little more confident about approaching science in the future”</i>	<b>1.62</b>
<i>“I would recommend Fife Science Festival to others”</i>	<b>1.24</b>

## **Individual Event Evaluation**

Below is a breakdown of outcomes by event, where evaluation was carried out, showing specific event outcomes.

### **Science Discovery Day**

#### **Family fun day; University of St Andrews, Saturday 12<sup>th</sup> March**

The event was very well attended, with over 500 children and adults, most of whom were from St Andrews or the East Neuk. The event also attracted those from other areas in Fife (including Dunfermline and Glenrothes), as well as visitors from Dundee. Most had heard about the event through word of mouth, or through school, although a number of visitors had known about the event from attending in previous years.

Feedback was very encouraging, with many citing the variety of exhibits and the friendliness of exhibitors as their highlights. Others commented that they *“really liked the enthusiasm of the demonstrators and the message that science was fun”* with one visitor commenting that the event was the *“best science event we have been to!”*. Responses show that outcomes were very positive overall, with enjoyment and the feeling that visitors had ‘learned something new’ scoring highest (average 1.2). When asked what aspects of the event could be improved, many visitors said *“nothing”*. Other comments included that the event be held more often, and that the event could benefit from increased publicity, to increase visitor numbers further.

Most significant learning outcomes:

- Knowledge and Understanding
- Activity, Behaviour and Progression
- Enjoyment, Inspiration and Creativity

### **The Under-Water World and Climate Change**

#### **Interactive activity; University of St Andrews, Saturday 12<sup>th</sup> March**

This drop-in event ran as part of the above Science Discovery Day at the University of St Andrews, allowing children to learn about the research conducted by the Pelagic Ecology Research Group (PERG), in a fun, interactive way. Organisers remarked that the event was *“a really good success”*, with children really getting involved in the demonstrations and activities. Children seemed to particularly enjoy the t-shirt printing, which offered the chance for children to learn more about marine life whilst making a memento of their day.

### **Battle of the Sexes: From Sex Differences to Sexual Conflict**

#### **Public lecture; University of St Andrews , Monday 14<sup>th</sup> March**

The event attracted around 20 visitors, aged between 20 and 70, with an approximately equal number of men and women. Of those sampled, most had heard about the event either through

the festival leaflet or via word of mouth, and were local to St Andrews. Those attending were very engaged with the lecture, with lots of questions being asked of the lecturers at the end. Outcomes which scored highest were enjoyment, the feeling that the visitor had 'learnt something new' as well as the opinion that science festivals could be trusted to 'portray science more honestly than the media or government' (all scoring an average of 1.0).

Most significant learning outcomes:

- Knowledge and Understanding
- Enjoyment, Inspiration and Creativity
- Attitudes and Values

### **Balcurvie Science Fair**

**Balcurvie Primary School, Monday 14<sup>th</sup> – Friday 18<sup>th</sup> March**

Involving primary and secondary school pupils, teachers and families from the area, Balcurvie Science Fair was very much a collaborative, community event. With lots of varied activities for children as well as their families, it allowed children to try new experiments (all of which could be recreated at home) and meant secondary school pupils (who displayed at the event most days) could share their projects with others, and teach the younger school pupils about simple science techniques. Most visitors to the event were from the local area, with the majority hearing about the event through the school newsletter or by word of mouth.

Enjoyment rated most highly as an outcome (average 1.47 and 1.4 for children) with written feedback from parents very positive, with many remarking how good it was to see "*the children so involved with science*" and that the fair provided "*a fun way to learn something new*".

Feedback from the children has been equally positive:

- "*I thought all the experiments were amazing. I felt like I was a scientist*"
- "*With all the exciting experiments going on it was like a science lab...I really enjoyed it*"
- "*I just loved it*"

Most significant learning outcomes:

- Knowledge and Understanding
- Enjoyment, Inspiration and Creativity

### **The Renewables Challenge**

**Travelling schools workshop; various schools throughout Fife, Monday 14<sup>th</sup> – Friday 18<sup>th</sup> March**

A collaboration between Adam Smith College and the Hydrogen Office, The Renewables Challenge was a series of workshops that explored the topic of renewable energy through fun, hands-on activities. 51 pupils participated, and anecdotal feedback suggests that the pupils were very interested in the activities – especially in the hydrogen-fuelled model cars, which many pupils had never used before.

## **Words, Wires and Waves to the World Wide Web: Workshops**

### **Interactive schools workshop; Museum of Communication, Monday 14<sup>th</sup> – Friday 18<sup>th</sup> March**

These bookable workshops for primary schools allowed pupils to learn about simple communications technologies in an informal setting. Four local primary schools took part in the workshops, and feedback was very positive; one teacher remarked that the Museum of Communication put on a *“tremendous workshop”* and that *“the children had a super time”*. The event organisers were also very pleased with how engaged the children were, remarking *“it is always so rewarding to see such enthusiasm”*. Feedback from pupils was also encouraging, with the majority of pupils citing *“making the robot”* as the activity they enjoyed most, which many as described *“awesome”*. Outcomes which scored most highly were enjoyment, the feeling that pupils had ‘learnt something new’ and the likelihood of recommending the venue to their friends (average 1.35, 1.35 and 1.4 respectively). When asked what could be improved about the event, most said *“nothing”*, and some said that the activity could have benefitted from *more time”*.

Most significant learning outcomes:

- Knowledge and Understanding
- Enjoyment, Inspiration and Creativity
- Activity, Behaviour and Progression

## **Building a Cathedral: Schools Programme**

### **Interactive schools workshop; St Andrews Cathedral, Monday 14<sup>th</sup> – Friday 18<sup>th</sup> March**

Building a Cathedral was another popular schools workshop, held at a Historic Scotland venue. The event taught children about medieval construction and simple engineering principles through model-making and hands-on activities. Schools came from across the region and were likely to hear about the event via email or from the festival leaflet. Feedback was really positive from both pupils and teachers, with most pupils finding building a miniature catapult the ‘best thing’ about the event. This event allowed pupils to explore scientific themes in a different way, and many pupils said that they had ‘tried something new’ at the event (average 1.18). Outcomes were also high in enjoyment and in the feeling that ‘working in science might be fun’ (average 1.18 and 1.36 respectively).

Most significant learning outcomes

- Skills
- Activity, Behaviour and Progression

## **Medieval Construction Science Show**

**Interactive schools workshop; Aberdour Castle; Tuesday 15<sup>th</sup> and Wednesday 16<sup>th</sup> March**

This was one of the festival's most successful events, which completely booked up shortly after it was announced. The event offered a new insight for pupils into how castles were constructed and why science and engineering helped medieval people to create buildings that still stand today. Feedback was very positive from pupils and teachers, with enjoyment and knowledge and understanding outcomes scoring highly (average 1.23 and 1.38 respectively). Pupils also were also likely to feel more confident with science as an outcome of the event (average 1.28) as well as feeling that the venue provided 'a good way to learn about science in a different way to school' (average 1.38). When asked what was the 'best thing' about the event, the majority of pupils said "*everything*". Many teachers said the best aspect of the event was that the activities encouraged discussion amongst pupils, while allowing the children to visit historic surroundings, which many children had not experienced before. When asked what could be improved about the event, most pupils replied "*nothing*", and one teacher suggested that the event could be turned into an outreach programme, to allow themes to be explored further; others suggested that the event could be improved with increased participation from pupils.

Most significant learning outcomes:

- Enjoyment, Inspiration and Creativity
- Knowledge and Understanding
- Attitudes and Values

## **Skills for the Future**

**Interactive open evening; Future Skills Centre, Adam Smith College, Tuesday 15<sup>th</sup> March**

This open-evening at the 'Future Skills Centre' allowed visitors the unique opportunity to have a look around the newly built facility, including tours around workshops where the college trains new apprentices and conduct research. Due to particularly bad weather, turnout was lower than expected, (around 10 visitors) however those who did attend were enthusiastic about the activities on offer.

## **Cafe Science: 'City Critters: Why should we Care?'**

**Informal talk followed by a discussion; Tayport Community Cafe, Thursday 17<sup>th</sup> March**

This Cafe Science event was the first in the area, but managed to attract a strong audience of approximately 20 people, aged between 16 to 70, with an equal amount of men and women in attendance. The vast majority of those who attended were from the locality, who had heard about the event mainly through word of mouth, although some had come across the event whilst walking past the venue. When asked what visitors enjoyed most about the event, many named the speaker as their highlight who was described as "*lively*" and "*approachable*". Many thought

“*nothing*” could be improved upon, with some visitors suggesting the event could have benefitted from increased publicity.

Enjoyment, trust in science festivals as an educational resource and knowledge and understanding all scored highly (average 1.0, 1.41 and 1.08 respectively).

Most significant learning outcomes:

- Enjoyment, Inspiration and Creativity
- Knowledge and Understanding
- Attitudes and Values

### **‘The Edge’: Science & Technology ‘Circuit Training’ Challenge Interactive schools workshop; Carnegie College, Thursday 17<sup>th</sup> March**

Held at the newly built Whitlock Energy Collaboration Centre, Rosyth, this invitation-only event allowed local S2 pupils to learn about renewable energies by building their own wind turbine. Pupils were divided into groups and allocated an apprentice, who was on hand to share their skills and show how ‘classroom science’ can be used practically. Pupils appeared to really enjoy the ‘circuit training challenge’ with teachers remarking upon how engaged the pupils were. Pupils seemed to really enjoy the added element of competition too, with each group competing against the clock to make the most efficient turbine with the materials available. When asked what the ‘best thing’ about the event, many pupils mentioned the activity, but others also enjoyed the presentation on careers in science as well as the opportunity to be “*creative with your ideas*”.

### **Scottish Fisheries Museum**

#### **Interactive schools Workshop; Scottish Fisheries Museum, Friday 18<sup>th</sup> March**

To coincide with their current ‘Taste of Europe’ exhibition Dundee Science Centre, in collaboration with the museum, held ‘How to make the perfect poo’ workshops, to teach pupils about nutrition and the human body.; the workshops were attended by four classes (from P1-P5) from a local primary school, reaching over 110 pupils. Pupils appeared very engaged with the activities and organisers remarked that children really enjoyed learning about the body in such an interactive way.

### **Bell Pettigrew Museum Open Day**

#### **University of St Andrews, Saturday 19<sup>th</sup> March,**

The event was very well attended, with over 280 visitors (a very considerable increase on the previous year). Although visitors were mainly made up of families, there were a considerable number of adult visitors, some of whom were students of St Andrews, with most finding out about the event via local newspapers or word of mouth. Enjoyment and a feeling that they ‘had learned something new’ were amongst the highest scoring outcomes (average 1.36 and 1.4 respectively). Visitors were likely to feel that the event ‘had made me want to learn more about

science' (average 2.09) and largely agreed that it made them feel that 'science was more relevant' to their lives (average 2.18) however this is thought to be due to the fact that many who attended the event already had a keen interest in science. When asked what they enjoyed most about the event, most visitors cited the museum's collection and the activities available for children. Many cited 'nothing' or that there should be 'more of the same' when asked what improvements could be made.

Most significant learning outcomes:

- Enjoyment, Inspiration and Creativity
- Knowledge and Understanding
- Attitudes and Values

### **Sci-Art Experience!**

**Family fun open day; Adam Smith College, Saturday 19<sup>th</sup> March,**

The second event to be held at Adam Smith College, 'Sci-Art Experience' was an event aimed at families, to help communicate scientific themes in a creative manner. In comparison with events held during the same weekend, this event reached smaller visitor numbers (29 visitors). However, despite this, event organisers report that those that did attend appeared to thoroughly enjoy the event, remarking that "*activities were really well received*".

### **Medieval Construction Science Show**

**Family science show; Aberdour Castle, Saturday 19<sup>th</sup> March**

To coincide with their Medieval Construction Science Show for primary school pupils, Historic Scotland's Aberdour Castle also held a public event which covered involved similar themes and activities. Visitors came from across East and Central Scotland, with visitors from Edinburgh and Dundee, as well as Fife itself. Most had heard about the event through the festival's leaflet or via word of mouth, although some families had children who had visited with their school earlier in the week, and wished to try the workshop themselves. Feedback was very positive, with many citing audience participation and the "*enthusiastic*" presenter as the 'best thing' about the event. Outcomes were highest in enjoyment as well in the feeling that visitors were likely to 'recommend Fife Science Festival to others' (average 1.31 and 1.26 respectively). When asked what aspect of the event could have been improved, many said "*nothing*", and others said that events such as this should be more frequent, or that the event could have benefitted from increased advertising, to attract an even larger audience.

Most significant learning outcomes:

- Enjoyment, Inspiration and Creativity
- Knowledge and Understanding
- Activity, Behaviour and Progression

### **Science in the Supermarket**

**Science demonstrations; Morrison's Supermarket, Glenrothes, Saturday 19<sup>th</sup> March,**

This event reached around 80 people, with a broad demographic, mostly made up of families with young children and grandparents with their grandchildren, mostly from the local area. Exhibitors commented that visitors seemed very enthusiastic and engaged with the science experiments, especially with the fingerprinting display.

### **Dundee Science Centre, Sensation: Free Family Fun for Fife!**

**Free admission to science centre; Sunday 20<sup>th</sup> March**

The Free Family Fun for Fife day was the festival's most successful event, attracting more than 740 visitors to Dundee Science Centre. Visitors mainly comprised of families with young children from all over Fife, including Dunfermline and Kirkcaldy. Feedback was positive, with many visitors commenting that they had not visited the centre before, but free entry offered an opportunity for them to do so. Most had heard about the event through local newspaper coverage, however some had learnt of the event via the festival leaflet. Of all outcomes, enjoyment and likelihood to recommend the festival to others scored most highly (1.2 and 1.07 respectively). When asked what they enjoyed most, visitors mainly cited the hands-on exhibits and the planetarium; when asked what aspects of the event could be improved, most visitors said "*nothing*" and one younger visitor saying that the centre was "*perfect*" just as it was.

Most significant learning outcomes:

- Enjoyment, Inspiration and Creativity
- Activity, Behaviour and Progression
- Knowledge and Understanding