

Science[®]
Sparks



Current Science Teaching Resources for Schools.

Science Sparks®

Funded by the Scottish Government, Science Sparks has brought together scientists, teachers and the business community to deliver a collaborative, innovative and sustainable educational resource.

The Science Sparks team is made up of the Moredun Research Institute, and The Business Partnership companies: the Bright Business Partnership and the Hydrogen Office. Our collaborative approach allows the team to work together with teachers to develop topical science projects for schools, which are relevant to the new Curriculum for Excellence (CfE) and help to promote STEM (Science, Technology, Engineering and Maths) subjects.

The Brief

Initially targeted at P7 pupils in rural areas of Scotland (Scottish Borders, Dumfries and Galloway, Midlothian, Fife) this inspiring pilot programme aimed to establish the sustainable incorporation of specialist science input into the Curriculum for Excellence through cross curricular and interdisciplinary activities.

Teachers also benefited from Science Sparks by taking advantage of the support opportunities available, which aims to improve teachers technical knowledge and confidence when delivering science in the classroom.

The Resources

The pack contains background information, teaching notes, activity ideas and project suggestions for each of the four Science Sparks topics.

- Renewables & Alternative Energy
- Climate Change
- Biodiversity
- Health & Wellbeing

The website www.sciencesparks.org.uk was launched in March 2012, and has proved a very successful resource with 200+ users to date. All the resources are available to download either as a whole topic, or as individual worksheets, depending on requirements. PowerPoints, worksheets, games, and much more are available for free!

The Benefits

- Teachers can fit the projects into the curriculum they deliver throughout the year.
- Provides relevant and achievable options to help hit science objectives.
- Provides the background knowledge & support to deliver topical science in the classroom.
- Provides teachers not only with materials and ideas but with more confidence to deliver science outcomes.
- Provides business & industry links to help bring the relevance of the topics to life.
- Provides a framework for teachers and pupils to explore the relevance of scientific research to their everyday lives.



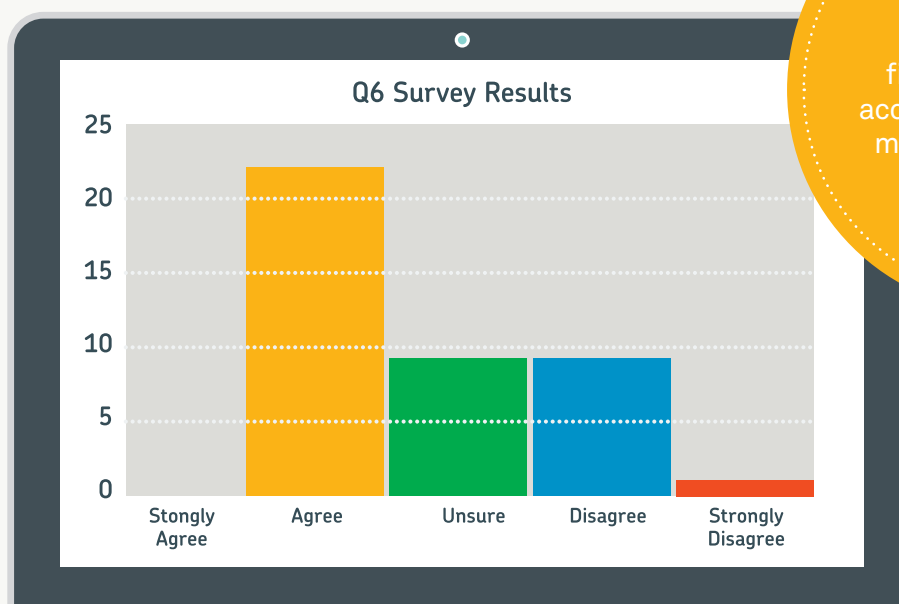
Science Sparks® Teacher Workshops

Workshops were conducted to introduce Science Sparks to classroom teachers, school science coordinators and local authority education representatives.

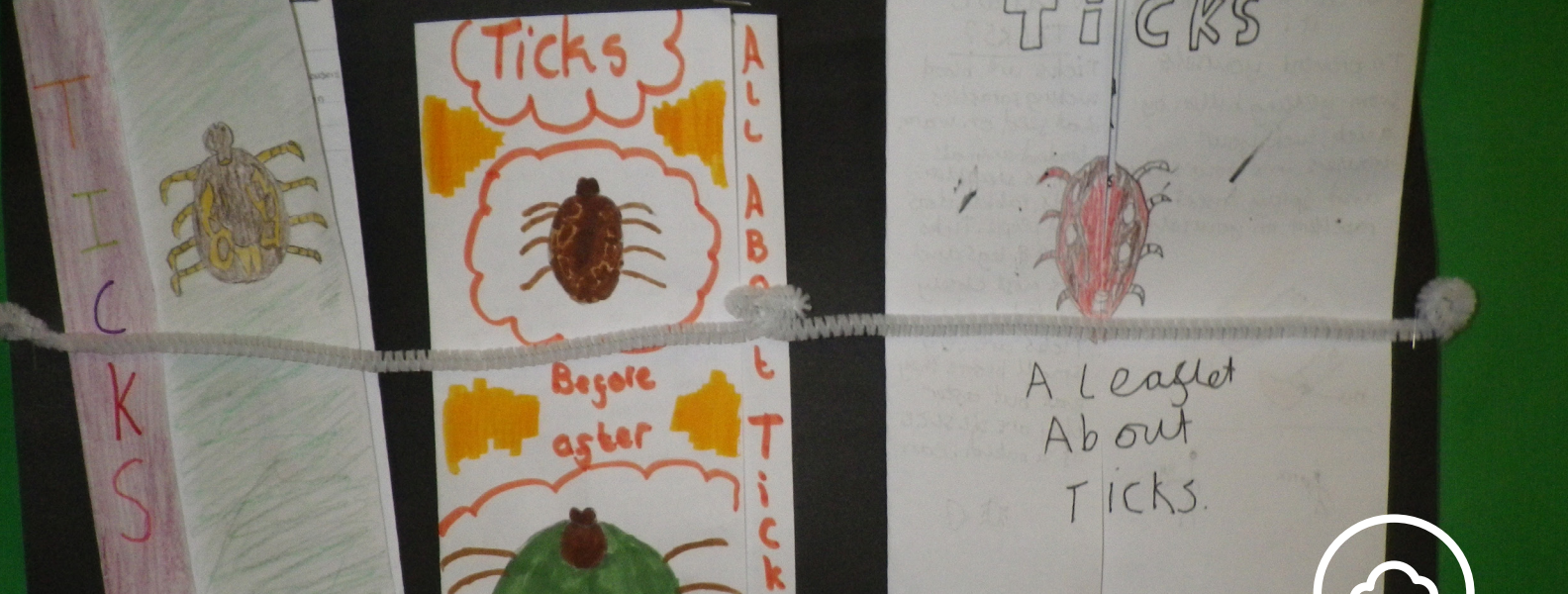
The Science Sparks workshops were very worthwhile and effective. Teachers reported that the sessions helped refresh enthusiasm for science teaching and provided inspiration to try something new. The workshops also presented an excellent opportunity for the Science Sparks Team to gather and review current attitudes towards teaching science in the primary classroom and to gain a greater insight into the type of resource and support required by teachers.

“I would just like to thank you for the workshop you delivered a few weeks ago, it was really useful to see some interesting approaches to teaching science that will make it more fun to deliver”.

Primary Teacher, Scottish Borders



Q6
I have a problem finding reliable and accurate sources to aid my science teaching.



Science Sparks@
Climate Change

School
Kings Park Primary

Region
Midlothian

Primary 7 teachers who were inspired by the Science Sparks regional workshops told the Team how they utilised the resources during their school science week:

How did your school become involved with Science Sparks?

We were invited to attend one of the Midlothian regional workshops, which we found to be really effective and a great way of bringing the topics and ideas to life. We left the workshop feeling confident and inspired to try something new.

Why did Science Sparks appeal to you?

We were keen to be involved in Science Sparks due to the topical science subject areas and support available. It was great that the resources were flexible, and we were able to use the opportunity to do something as part of our science week.

How did you utilise the Science Sparks resources?

We tied in the science aspects with a number of other initiatives, mainly reading for information, as well as health and wellbeing and managing risk. We saw the tick topic as a great opportunity to prepare the children for school camp later on in the year.

The children took part in general discussions about ticks and climate change, making use of models and the tick board game. They then completed a summarising task by reading different abstracts about ticks, filtering the information and making decisions based on what they had read.

Once familiar with the topic, the children got creative and produced health information sheets which were displayed in school for the other pupils to see and read.


What do you feel are the benefits of Science Sparks?

As well as scientific knowledge, the Science Sparks workshop gave us the inspiration and confidence to try new things. Throughout our involvement in the project it was great to feel supported and have confidence in the resources. The children also had a lot of fun!

The current research behind the topics really interested us; it allowed the children to become familiar with topical science that is relevant to Scotland.

Would you utilise Science Sparks again?

Yes, definitely, we would like to maybe do a longer term project next time and make use of the resources and support on offer.



**At the end of the debate
the vote was for either
nuclear energy or
renewables in the future.**

The result was a clear
win for renewables.



Science Sparks@
Renewable Energy

School
Newtongrange Primary

Region
Midlothian

How did the project come about?

The P7 teacher was inspired to conduct a project on renewable energy following the initial Science Sparks teacher workshop session held in Midlothian.

How were the Science Sparks team involved?

Teacher support was provided by the Science Sparks team with regards to worksheet availability, the website, activities and attendance at the final project debate.

The Debate - What are the Best Types of Energy for Scotland's Future?

Pupils represented:

- For & against Nuclear Energy
- For & against Wind Turbines
- The Government Committee for Climate Change
- Scientists for Nuclear Power

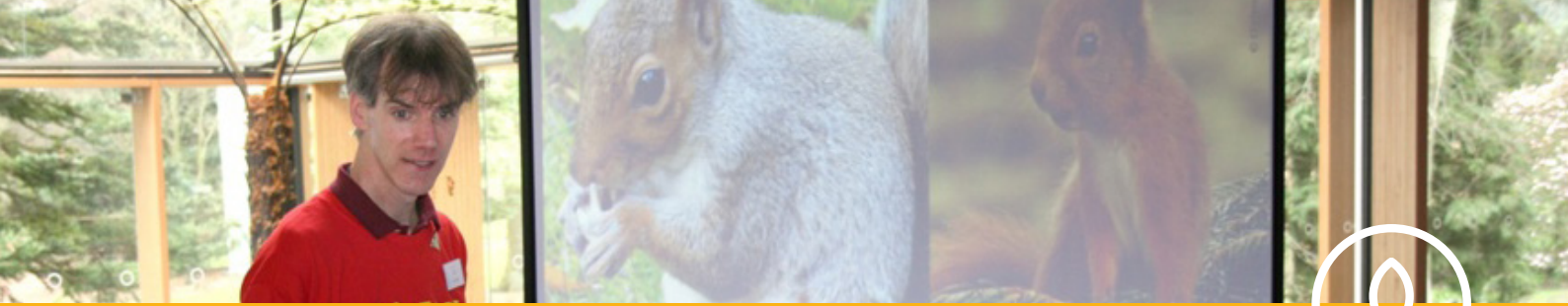
The pupils represented different views, and promoted their ideal sustainable energy options for the future, through PowerPoint presentations, surveys, internet searches, and video clips. Pupils also had to demonstrate public speaking and debating skills through making their own points, answering questions and through their presentations. A panel of local business and government experts were also invited along to give their opinions.

What were the benefits of the science sparks programme?

The Science Sparks programme had a very positive impact on the pupils. They covered many aspects of the CfE including Sciences, Technologies, Languages, Social Studies, and Literacy. It was obvious that the children had learnt a lot throughout the course of their project. They were all very knowledgeable and confident on the subject of renewable energy and were able to argue for or against a type of energy, even if this was not their own personal view.

“...science sparks hits the spot with the children. A clear winner. Cleverly it can be used on an individual basis or in team working arrangements with equal interest across age, ability range and gender. In each class the pack sparked a lively debate upon the content with much peer to peer teaching going on between the pupils and teachers”.

Bill Hutchison (Schools & International Manager), Adam Smith College, Fife.



Science Sparks@
Biodiversity

School
Coldstream Primary

Region
Scottish Borders

Science Sparks has generated interest across the primary year groups. Biodiversity – Tale of Two Squirrels was utilised by a class of P3 pupils at Coldstream Primary School, as part of a longer term Science Sparks project they called ‘Save our Squirrels’.

The pupils created a woodland habitat in their classroom and over the course of the term took part in 8 lessons that introduced the woodland habitat, the characteristics and needs of squirrels and the problem with squirrelpox, a virus that is a major threat to the red squirrel population and is the topic of a research programme in Scotland.

This fun, story led project focused on the character Sammy the Red Squirrel who was worried about his friends in the nearby woodland that were becoming sick. As part of the project, the pupils practised their emailing skills and invited experts to help inform Sammy about squirrelpox. As a result a scientist came to the school to give an interactive talk to the class about the disease, how it affects the red squirrel population in the UK and how scientists are trying to control and prevent the disease.

“A great opportunity to gain support in gathering ideas and resources”.

Primary Teacher, Scottish Borders



Science Sparks@
Health & Wellbeing

School
St Columba Primary

Region
Dumfries & Galloway

The Science Sparks team were approached by the organisers of the Dumfries and Galloway Science Festival, Science Connects, to arrange a visit to the P6/P7 class at St Columba Primary School in Annan.

The class participated in a discussion about bacteria, parasites and viruses before learning more about them, where they can be found and how they can cause disease. The pupils were then given a craft activity to create their own bug models with Playdoh, straws, pipe cleaners, and plastic balls. They were asked to complete an ID card for their new pathogens identifying which group they belonged to, what symptoms they caused and how the disease can be prevented.

The pupils had great enthusiasm for the activities and engaged well with the tasks given. The verbal feedback collected was exceedingly positive from the pupils and a request was made for a return visit and future involvement with Science Sparks.

“It was a great session and we got a lot from your input and the practical activities”.

Primary Teacher, Dumfries & Galloway

Following consultation with teachers at the Science Sparks workshops, there was demand for a stand alone website that could be used as a source of information and materials to help support science teaching in schools. Therefore, the Science Sparks website was launched on 1st March 2012 at the Association for Science Education Scotland Conference.

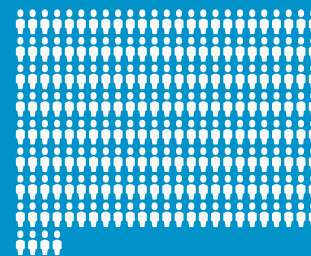
The website allows teachers and all those interested in science education to download the Science Sparks resources free of charge. Registration is free, quick and easy and once signed up users have free unlimited access to all the resources, as well as the capacity to share comments and receive updates on new materials and relevant announcements.

Registrations have largely been generated by word of mouth and targeted promotion to individuals, however the project has also been publicised at events such as ASE Scottish Conference, STEM Ambassador celebration events, Edinburgh International Science Festival and the CAMERAS annual conference.

The majority of registered users are associated with a school although the resources have attracted individuals from science centres, scout groups, science and engineering clubs, and local authority education departments.

The registration details recorded have also shown that the Science Sparks project has received interest from across the whole primary school and early secondary age range.

In the first three months the website received over 200 registrations from schools across 18 different regions in Scotland with additional interest from England & also outside the UK.



Total number of subscribers:

204

Aberdeen City 20

Argyll & Bute 02

Falkirk 20

Glasgow City 05

North Lanarkshire 01

Renfrewshire 01

Stirling 13

Angus 03

England 02

Outside UK 02

No of Regions in Scotland with subscribers:

18



Clackmannanshire 02

Dundee City 10

Fife 08

Perth & Kinross 08

West Lothian 42

East Lothian 20

Edinburgh City 18

Midlothian 07

Scottish Borders 09

South Lanarkshire 01



The Moredun Foundation is a registered charity committed to promoting animal health and welfare through research and education and is recognised worldwide for its contribution to research into infectious diseases of farmed livestock.

www.moredun.org.uk



The Business Partnership Ltd, incorporating the Bright Business Partnership and the Hydrogen Office, is a not for profit organisation whose aim is to promote industry / education links and make businesses more sustainable through good environmental management.

www.thebusinesspartnership.org.uk



We would like to acknowledge the Scottish Government, through the Office of the Chief Scientific Advisor, for providing the Science Engagement Grant (2011-2012) for the Science Sparks Project.

“It was refreshing and motivating”

Primary Teacher, Scottish Borders

“We really enjoyed the afternoon and the information packs have lots of useful ideas and information”

Primary Teacher, Scottish Borders

“The workshop was very interesting”

Primary Teacher, Fife

“I very much enjoyed hearing about the science sparks project and I can see how the projects/resources would fit into our science curriculum”.

Primary Teacher, Midlothian

“I found the pack had helpful information”

Primary Teacher, Midlothian