



Newsletter #1

Spring 2004

Welcome to SCI-FUN

In this first issue of the SCI-FUN newsletter we would like to introduce you to the variety of activities which we offer and to give those of you who have not yet experienced SCI-FUN enough information to whet the appetite. A huge "Thank You" to everyone who has helped to develop SCI-FUN over the last three years – current staff; previous staff who have moved on to other positions in teaching, science centres and science communication; teachers; colleagues in the College of Science and Engineering at Edinburgh; and those who have supported us financially (more about them later). We must also mention the New Zealand Science Technology Roadshow, because the hire of their equipment for the pilot in thirty Lothian schools – and the hospitality given to one of our students in the summer of 1999 – were crucial to the re-structuring of SCI-FUN.

In future issues we would like to include contributions from teachers, pupils and university students, in addition to reports on recent events; we look forward to hearing from you. In the interval between newsletters, the web site will carry the latest information.

We are delighted to be in the position to take Roadshow bookings now for 2004/05. For the first time we hope to plan the schedule well in advance, allowing time to build additional features into the standard programme. We still face many challenges – life is anything but boring, but the rewards are in the knowledge that we are making a difference.

We look forward to strengthening existing collaborations and to establishing new collaborations across the whole of Scotland in the months ahead.



Dorothy McMurrich

The Roadshow – Visiting Your School

We visit 80-100 schools each year throughout Scotland, and approximately 20,000 pupils take part in the roadshow. Sessions are timed to fit with the school timetable, minimising disruption.

- The entire S2 year-group is included – up to 300 pupils per school – with more limited access for P6/7 classes. (The exhibition requires a large hall, available for at least 24 hours.)
- The activities are available within the school, allowing all teachers access at their convenience, and reducing the time taken from classroom teaching for both pupils and teachers.
- The cost of travel is eliminated, or reduced for visiting groups.
- The three sciences are given a balanced presentation.
- The importance of mathematics to support science is emphasised.
- Other relevant subject areas such as technology and computing are included.
- For the most part, the pupils are actively involved and supervised.
- Approximately 30 minutes are spent in the hands-on area.
- S5/6 pupils are trained as helpers.
- Each group of 5 or 6 pupils is guided by a university student or senior pupil.

We tailor our visits to suit the scheduling and resource requirements of each school. A day might look something like this, however:

- Arrival:** We arrange an arrival time to suit your school: it can be first thing in the morning, for example, or on the afternoon of the previous day.
- Set-up:** It takes us between one hour and ninety minutes to fully outfit an entire hall with our shows, displays and hands-on exhibits. We also give training to senior pupils, to act as explainers.
- Sessions:** Up to three sessions per day, each for 60-80 pupils, lasting for 75-100 minutes (tailored to fit in with your timetable), consisting of the following elements:
- Two science shows, with demonstrations and opportunities for pupil participation;
 - A careers presentation, with advice on subject choice, and emphasis on choosing more than one science subject;
 - A hands-on session lasting around 30 minutes, with up to 40 exhibits, covering all areas of science.
- Pack up:** In just over an hour the hall is restored to its original state, and we move on the next school.



Two Science Shows per Session



A Careers Presentation



Up to Forty Hands-on Exhibits

You can find more detailed information on our Roadshow at our web site: www.scifun.ed.ac.uk.

Who Are Our Presenters?



SCI-FUN Presenters: Lindsay Hogg, Doug Robertson, Cath Penfold

SCI-FUN employs three full-time presenters, all science graduates with a keen interest in conveying to others their own enthusiasm for science. They present shows and careers talks, supervise the hands-on sessions, train senior pupils as Explainers, and – when not out on the road – are involved in the creation of new shows and exhibits. The team also share the supervision of pupils on Work Experience placements, as described below. To give you some idea as to the background of a SCI-FUN presenter, here are some brief details for our 2003/04 team, shown above:

Lindsay Hogg

Lindsay was born in Leith, before moving to Penicuik. At school she took only standard grade Chemistry, but then realised that she was fascinated by Biology, and so took both subjects at Higher. It was at this point that she wished she had chosen Biology the previous year! Lindsay studied Biology at Edinburgh University, and found that her knowledge of Chemistry helped her work. (She even realised that a Physics Higher would have been useful.) While completing her Genetics honours project, she decided that she did not want to work in a laboratory, and instead took a Masters in Communicating Science with the Open University. Before joining SCI-FUN, Lindsay worked as a sports assistant, and has been a swimming instructor for several years.

Doug Robertson

Born in Inverness, Doug was educated in Elgin, taking Highers in all three sciences, Physics being his particular interest (helped by an

inspiring teacher). He went on to study Physics at Aberdeen University, and after graduating worked at the science and discovery centre, Satrosphere, where he discovered a real enjoyment in science communication, and in trying to enthuse people about science. While there, he was given the opportunity to develop many shows and workshops, in Astronomy and “fun-fair” Physics. After a short spell with Dynamic Earth, Doug joined SCI-FUN. Next year, he hopes to begin a PhD in Astrophysics.

Cath Penfold

As a young child, Cath was told about DNA and its role in the development of all life on Earth, and was immediately “hooked”. At school she studied Biology, Chemistry and Maths at A-level, then took Biochemistry and Genetics at Liverpool University. After a placement year in microscopy at SmithKline Beecham, she was thrilled to be able to take a PhD at the Institute for Stem Cell Research in Edinburgh (her supervisor being one of the advisors to the group who cloned Dolly the sheep!) During her PhD, Cath volunteered to help with SCI-FUN, and since completing her doctorate she has joined us as a full-time presenter. In her own words: “I hope that our Roadshow inspires young, budding scientists on their own journey of knowledge and innovation.”

Find more information on our presenters (and on all the other members of the SCI-FUN team) at our web site: www.scifun.ed.ac.uk.

Opportunities for Students

In addition to a full-time team, SCI-FUN frequently offers students the opportunity to get involved – those who are keen to gain experience in science communication, or may have an interest in teaching, or working with children. Richard Walker, a first-year Electronics and Electrical Engineering student at Edinburgh, spent the four weeks of his Easter break working for SCI-FUN, and recalls his experiences on the job. “I first encountered SCI-FUN when the roadshow visited my school when I was in 6th year. I thought it might be fun to be involved as a student, so contacted Dorothy when I went to University. It turned out to be a very enjoyable and relevant way to spend my holiday, enabling me to gain confidence, and extend my experience of public speaking. It was also a good opportunity to meet others from all sorts of different scientific disciplines – I learned more biology from one day in the bus going to Glasgow than in the rest of my life! A real learning experience.” Many students recognize the benefit of getting involved in SCI-FUN for upgrading their CV, especially in terms of transferable skills, and consider the experience to be an invaluable tool for finding jobs later in life.

We are always interested in working with students, and there are usually vacancies to be filled for Roadshows throughout Scotland. (Curiously, visits to such places as Orkney or the Western Isles are often oversubscribed!) If you would like to learn more, visit www.scifun.ed.ac.uk to see our placement schedule.

Work Experience Placements with SCI-FUN



Two of our work experience pupils

One-week work experience placements are offered to S4 and S5 pupils, to give them an idea of the kind of work involved with SCI-FUN. For example, Duncan Brannan and Iain Clark (shown opposite) from Boroughmuir High School in Edinburgh worked with us for a week in 2003, and had the following varied schedule:

- Visits to two schools with the Roadshow: setting up; watching and commenting on the shows; using the hands-on exhibits; helping groups of younger pupils;
- In the workshop: sorting and cataloguing our electronics workbench (and learning some electronics terminology);

- Conducting experiments on reaction times, and gathering real science data for use in exhibits and on our web site;
- Helping the SCI-FUN technicians with other tasks, such as collecting liquid nitrogen and dry ice for our shows;
- Ordering a gorilla costume (for use with a forthcoming show...)

If you would like any of your pupils to work for a week with SCI-FUN, contact Dorothy McMurich at the address shown on the last page, or email scifun@ed.ac.uk, to discuss dates.



苏格兰科技巡回展

Sino-Scottish Science – Sharing Ideas

At the beginning of March a delegation from the Royal Society of Edinburgh visited the Chinese Academy of Sciences in Beijing for a week of meetings and visits. Dorothy McMurrich and Stuart Monro (*Our Dynamic Earth*) were among the delegates to explore the possibilities of closer collaboration between China and Scotland in the area of Public Understanding of Science.

Science in China is developing fast and, whereas in the past many of its top researchers moved to the US and Europe, China is now attracting back many of its world-class researchers. In Scotland the uptake of science – even in schools – is below government expectations, so initiatives to support teachers of science and to support science research share equal importance with the raising of public awareness and appreciation of science-related issues. In China the population is so large there does not appear to be a shortage of young people pursuing science. The academic community appears therefore to be reluctant to engage in the popularisation of science because there is no immediate benefit to research programmes.



A Beijing High School

A visit to one of the top high schools in Beijing provided an interesting comparison with high schools in Scotland. 2700 pupils aged 11–18 years attend the school. 1700 pupils board at the school; some of these come from countries such as Korea and Japan.

Pupils must achieve grades of the required high standard to progress from the Junior school to the Senior school at the age of 14/15. The percentage of pupils progressing from the Senior school to university was described as 100%.

The school boasts impressive facilities for learning and teaching. The modern campus with plenty of open space comprises of an Instruction block, a Science block, an Arts block, a theatre, a library block, a Gymnasium (containing swimming pool and indoor sports hall), an administration block, two dormitory blocks and an athletics track with an astro turf sports pitch. There is even an observatory in the Science Block!

It would appear that the pupils are enthusiastic about science, and science is a popular choice for the majority because they recognise that the prospects of a good career are good in the high-technology field. The intense pressure for a place at university is reflected in the apparent ethos of hard work. If this apparent interest in science is typical of young people throughout the country, the government aim that all adult citizens should be scientifically literate by 2049 (the centenary of the founding of the People's Republic) may be realised. However, as this school is reputed to be one of the best in Beijing, it is difficult to tell whether the majority of China's young people will experience such exposure to science.



Sino-Scottish participants

For the majority of young people in China and in Scotland, the teaching of science in school might well benefit from the enrichment opportunities offered by science centres, botanical gardens, zoos, aquariums and museums and other informal science providers.

In both countries the future economy depends on the talents and skills of our young people, and with a falling population in Scotland it becomes even more important that young people are made aware of the excitement of science. It is equally important to ensure that the careers prospects in science and engineering are sufficient to convince young people to work hard, raise their expectations and compete for the opportunity to contribute to Scotland's future. None of this can be achieved without collaboration.

The glaringly obvious difference between China and Scotland is size – and perhaps size does matter. A physics professor questioned why we in Scotland are putting such effort into encouraging young people to study more science – “science is such a wonderful subject – young people *all* want to do science!”

The visit was not all about work – the highlight was a visit to the Great Wall, an incredible feat of engineering. Watch out for a new SCI-FUN exhibit inspired by the steeper parts of the walk.

Feedback from Schools

It's extremely hard for us to find a suitable metric whereby we can measure our own performance. The numbers of schools and pupils visited can easily be counted, and we use questionnaires to try to elicit feedback from the pupils themselves, so that we can constantly improve the Roadshow. Word-of-mouth and written responses are, however, also extremely important to us; the following small sample is (reassuringly!) representative:

One teacher wrote to thank us for the job done by SCI-FUN in his local school:

“My eldest daughter is in S2 and came back raving about the day.”

He describes himself as:

“a science teacher who had previously failed miserably to convince his own daughter of the need to do two sciences! SCI-FUN did in one afternoon what I had been failing at for a long time.”

Some other quotes, from teachers:

“If we had known it would be this much fun and educational, we'd have taken the whole school!” [Primary teacher at a recent event.]

“The involvement of our S5 and S6 pupils was very positive. I think guides and guided gained almost as much as each other!”

“Thank you and your fabulous team for bringing us this show; it seems to get better and better with each successive year. We are in no doubt that our pool of budding scientists has increased dramatically, following this insight into the world of science and technology.”

“The presenters' enthusiasm was infectious, and their expertise and professionalism was a credit to themselves and your organisation.”

“This is the best thing we have had in this school by far... in over a million years.” [a science teacher, older than he looked...]

From a recent S5 work experience student:

“When I returned to school I realised that I had been involved in one of the most enjoyable and rewarding placements. There was no element of the week that I did not enjoy and this became evident when I was asked to fill in an evaluation form.”

And from the Roadshow customers, the pupils:

“That was brilliant; I can't wait to fill out the questionnaire!”

“I get it! Science is everywhere. Science is in everything!”

“It's wonderful how you make Science so accessible.”

[to a presenter:] *“I want your job.” [Apparently this has also been said on occasion by teachers...]*

Motorola Sponsors SCI-FUN... again

Mobile phone giant Motorola has awarded SCI-FUN \$25,000 as part of Motorola's ongoing support for the education programme set up by the University of Edinburgh. Motorola communications and public affairs manager, Dawn Bliss, presented the cheque to Dorothy McMurrich when the Roadshow visited Trinity High School in Rutherglen.

The Motorola Foundation has supported SCI-FUN since 1997 and, as well as providing the

university with funding to develop and maintain the Roadshow, key personnel at the East Kilbride facility have taken an active interest in supporting SCI-FUN initiatives over the years.

Dawn Bliss said: "Encouraging more young people to consider a career in science and engineering is critical in helping develop Scotland's skills pipeline for the future, so we're delighted that SCI-FUN has been successful in its application for support from the Motorola Foundation."



Dorothy McMurrich and Brian Cameron receive the sponsorship cheque from Dawn Bliss of Motorola, during SCI-FUN's visit to Trinity High School

Further Sponsorship

In the first few years of the SCI-FUN Scottish Science Technology Roadshow it has been possible to deliver activities to more than 50,000 pupils in Scottish schools and an additional 140,000 pupils, teachers and members of the public at events such as the BBC's Tomorrow's World Roadshows and the Institute of Physics Annual Congress. The programme for 2003-2004 has been generously supported by the University of Edinburgh and the Scottish Executive, with additional support from Careers Scotland and continuing support from the Motorola Foundation.

The Scottish Executive has also sponsored a new people carrier to transport the team – this will provide the flexibility to deliver an additional programme of visiting shows, talks and workshops to smaller groups in nearby schools during the

visit of the main exhibition to a secondary school. Further information about this will be available in the next issue.

A recent grant of £33,000 from the Particle Physics and Astronomy Research Council will fund the initial stages of a project entitled PP4SS - Particle Physics for Scottish Schools. Alan Walker, senior lecturer in Particle Physics, has considerable experience in bringing the excitement of this subject to new audiences, young and not-so-young alike. This project aims to support Physics teachers, engaging pupils in physics by introducing particle physics at a stage when many pupils may be considering turning away from the subject. The resources will also be available for senior pupils taking advanced physics to encourage the further take up of physics at university.

New Vehicles

SCI-FUN brings everything it needs to your school: up to forty exhibits, with tables; the materials for two shows; the careers presentation, with projector and screen; displays, banners and information stands; as well as two or three presenters and a technician! This doesn't all fit into one van...



SCI-FUN's Fleet of Vehicles

In the last term we've taken delivery of two new vehicles: we now operate a 7.5 tonne lorry; a mid-sized van; and most recently a 7-seat people carrier (generously donated by the Scottish Executive), all shown above. These give us the flexibility to take the full Roadshow to all parts of Scotland. They will also, however, allow us to extend the range of presentations offered by SCI-FUN.

The usual model for our Roadshow is to visit a group of secondary schools in one particular region each week. Each school is then served by the combination of shows and exhibits as described at the beginning of this newsletter.

We are interested in extending the service we provide, however, by creating a series of "mini-shows", aimed at a P7 audience, which can be set up and delivered by one presenter (and transported in the people-carrier). During our one-week stay in a region, the main Roadshow would carry on as before, while the mini-show would be taken to surrounding feeder primary schools. We are interested in trying to help bridge the gap between primary and secondary; it's important to get children interested in science as early as possible.

We will be working on these ideas over the next few months, and would be interested in any comments, or suggestions.

If you are interested in booking the SCI-FUN Roadshow for your school, it's helpful if you can let us know of any potential access problems for our vehicles (narrow entrances, docking bays, lift access for trolleys, and so on). Advance notice such as this lets us work out the best way to bring you our show, with the fewest problems.

For more information, or to book the Roadshow for your school, contact:

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