



THE UNIVERSITY
of EDINBURGH

SCI-FUN Roadshow Evaluation Report 2011/12

Contact Teacher Questionnaire

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Executive summary

“We have had the Roadshow in school for many years now and have noticed a significant improvement in pupil uptake in the sciences since we started having it.”

PT Science, Holy Rood High School, Edinburgh

This report provides an assessment of the SCI-FUN Roadshow scheme, which is run by the University of Edinburgh. The scheme takes the experience of a science centre to early secondary school pupils across Scotland. It aims to encourage more young people to consider STEM-based careers and to appreciate the role of science in their everyday lives.

An after-only questionnaire was used to gain the views of teachers who had organised the 32 Roadshow school visits in 2011/12. The online questionnaire involved questions of open and closed structures, as well as the opportunity to voluntarily comment further. The questionnaire achieved a 100% response rate. For the purpose of the analysis, and when necessary, the ranking scale was organised in sections, with 9/10 and 10/10 comprising the top ranking level.

The key messages of the survey are:

- a total agreement in the respondents' beliefs that the Roadshow visit increased their pupils' interest in studying science further;
- 91% of contact teachers rated the visit experience for the S1/S2 pupils as 9/10 or more;
- the most important element of the scheme is the collection of hands-on exhibits, with 94% of respondents rating these at the highest level; and
- 94% of contact teachers would strongly recommend the scheme to other teachers.

In addition, the presentations are well-regarded, although some teachers suggest that the presentations should comprise a smaller proportion of the session (16% of respondents). The lowest-ranked part of the session was the *Climate Change* presentation, but 47% still valued this in the top ranking bracket. Fewer than half the respondents consider that supporting the curriculum is a motivation in securing a SCI-FUN Roadshow visit, and fewer than a third use the online materials for follow-up work.

This report finds that the SCI-FUN Roadshow is effective in encouraging young secondary pupils to continue studying science at Standard Grade level and beyond. The hands-on exhibits are the most beneficial and most highly valued element of the scheme. To improve the offering to the schools further, the balance of the sessions should be reviewed. Further investigations should be made to assess if highlighting the curriculum support of the scheme is required, as well as to determine if supportive materials to enhance the impact of the visit are necessary.

The recommendations include:

- reviewing further the balance of presentations and hands-on exhibits in each session;
- highlighting more clearly the curriculum support offered by the scheme; and
- investigating the value of follow-up materials on the website.

As this study is based on the views of only 32 contact teachers, further work may be required to confirm the findings. It would be useful to obtain the views of pupils to get their direct impressions of the Roadshow scheme: an evaluation project with this as its focus began in May 2012, and is reported separately.

“An excellent and professional visit from a team of highly skilled science communicators. They have a real sense of understanding of how schools and teachers work and aim to fit into our constraints to make it the best possible experience for our S2 pupils.”

Liz Anne Jaffray, PT Physics, St Ninian's High School, East Dunbartonshire

1. Introduction

The SCI-FUN Roadshow, run by the University of Edinburgh, takes the experience of a science centre to early secondary school pupils across Scotland. The scheme comprises interactive presentations and approximately 40 hands-on exhibits covering a variety of scientific topics. The talks focus on general science ideas (*The Senses* in 2011/12); current research areas (*Climate Change* this year); and a subject choice presentation that emphasises the importance of the sciences for future career options, as well as in supporting everyday life.

The aims of the Roadshow scheme are – in conjunction with the school curriculum – to encourage more young people to consider STEM-based careers, and to appreciate the role of science in their everyday lives. Further details about the scheme are in Appendix 1.

For the past three tours, since 2009/10, the purpose of our evaluations has been to actively seek the views of contact teachers to improve our understanding of the scheme's impact, as well as to identify areas requiring further development. In addition, we have gained a detailed picture as to the effectiveness of the scheme and communicated this to our funders.

2. Methodology

We used an after-only questionnaire that incorporated a variety of open and closed questions with differing purposes: some questions were directly linked with our core aims (e.g. the apparent effect on interest in studying science further), while others sought opinions on the quality of each element of the scheme.

To allow for a basic comparison between recent Roadshow tours, some questions were equivalent to those in previous surveys. New questions were included to explicitly seek views about parts of the scheme that hadn't been fully investigated previously.

Every question provided an opportunity to provide further detail if the respondent chose to do so. Also, at the conclusion of the questionnaire, respondents were encouraged to provide further comments if they felt they had additional views to contribute, and hadn't felt this was possible earlier in the survey.

A version of the complete online questionnaire is provided in Appendix 2.

Many of the questions involved a rating scale from zero to ten. During the analysis, and in order to minimise the effect of people not selecting the maximum/minimum values due to personal attitudes (i.e. they don't want to just give 10/10 for everything), we have identified groupings for the ratings within these questions. These are (from lowest to highest): 0-2; 3-4; 5-6; 7-8; 9-10.

3. Evaluation Sample

As with our previous evaluations, we maintained our approach of eliciting the views of contact teachers. This select group already has an active interest in assessing the visit – they have to decide if they would request another visit in the next academic year – and their responses provide an accurate, time-effective assessment of our work.

A link to the ten-question online survey was emailed to contact teachers after our visit. If the questionnaire wasn't completed within approximately four weeks, a follow-up email inviting responses was sent. Using this method, we achieved a 100% response rate from the 32 contact teachers.

4. Descriptive Results and Initial Analysis

The results are presented in the order of the questions in the survey. The title for each figure includes the question that was stated. Please note: the number in bold after a quotation indicates the specific respondent that made that comment. A list of respondent details is provided in Appendix 3.

4.1. The knowledge and professionalism of the visiting staff

Figure 1: Using the following scale, how would you assess the knowledge and professionalism of the staff that visited? (Question 1)

Adjusted scale	0-2	3-4	5-6	7-8	9-10	Average
Knowledgeable	0	0	0	3% (1)	97% (31)	9.72
Professional	0	0	0	6% (2)	94% (30)	9.66

No "Don't Know" responses were given. Scale adjusted from original 0-10.

With 97% of respondents rating the delivery staff at a minimum of 9/10 for knowledge, it is clear that the SCI-FUN staff have an in-depth understanding of the activities that they are delivering:

"Very well-informed staff. Presentations pitched at just the right level and with just the right balance between being informative and being entertaining. Staff fully aware of current educational issues (Curriculum for Excellence) and the needs of schools." (10/10) (25)

"All staff are knowledgeable about science involved and the correct level to discuss with and enthuse young people." (8/10) (4)

Equally, the team present a professional image of the University of Edinburgh, with 94% of contact teachers rating the staff in the top rating bracket of 9-10:

"All members of the team acted in a very professional manner and were very approachable by both staff and pupils. A fantastic team you have there." (10/10) (6)

"All staff were professional in their dealings with both staff and pupils in the school and were able to answer all questions from pupils: both S2 and the senior pupils." (10/10) (22)

These results are comparable with the feedback provided in recent years, and demonstrate an on-going high-level quality of Roadshow staff, which reflects extremely well on the University.

4.2. The effect of the SCI-FUN Roadshow in the pupils' interest in studying science further

Figure 2: Using the following scale, in your opinion, how has the SCI-FUN Roadshow visit affected the S1/S2 pupils' interest in studying science subjects further? (Question 2)

Adjusted scale	0-2	3-4	5-6	7-8	9-10	Average
Level of interest	0	0	0	56% (18)	38% (12)	8.37

Don't Know = 6% (2). Scale adjusted from original 0-10.

Figure 2 shows a clear endorsement of the impact of the Roadshow scheme, with all respondents indicating a positive influence. The additional comments emphasise the varied influences the scheme has had:

“It has certainly had an impact in the number of pupils studying two, or even three, sciences and uptake is as high as it has ever been.” (8/10) (25)

“Pupils at all levels of ability were fully engaged in the activities and they were more confident when discussing the science that underpinned them.” (9/10) (30)

“Some pupils who have been very quiet in class were quite vocal about how much they enjoyed themselves... I can't remember the last time we had such a buzz among the pupils about science...” (8/10) (10)

Some comments, however, reflect a slight hesitancy in giving the highest ratings, which shows in the majority rating the affect in the 7-8 band. This is probably due a lack of concrete evidence at the time the questionnaires were completed – pupils were still to choose their subjects for further study:

“The majority of pupils I have asked enjoyed the experience. Difficult to judge influence [on subject choice process].” (7/10) (20)

“All pupils really enjoyed the Roadshow, but it is still a bit early to tell the effect.” (7/10) (19)

The views shared here indicate that teachers believe the SCI-FUN Roadshow has a very positive influence on the pupils attending our sessions, with no ratings below 7/10.

4.3. The best part of the SCI-FUN Roadshow scheme

Figure 3: What was the best part of the Roadshow programme for the S1/S2 pupils and why? (Question 3 – part a)

Aspect of scheme	Specific aspect	% of respondents	No. of respondents
Hands-on exhibits / interactives		84%	27
Presentations	Total references	38%	12 different respondents
	<i>General</i>	<i>9% of overall</i>	3
	<i>Senses</i>	<i>19% of overall</i>	6
	<i>Subject Choice / Careers</i>	<i>16% of overall</i>	5
	<i>Climate Change</i>	<i>6% of overall</i>	2
Overall balance / experience		13%	4
Enthusiasm of presenters		3%	1
Senior pupil involvement		3%	1

The practical experience offered by the hands-on exhibits is the key aspect of the Roadshow that is appreciated by the pupils we visit, with 84% of contact teachers making this comment. The high proportion is significant, as this was an open-ended question with no options provided to guide the thoughts of the respondents.

Schools can be restricted in what they can provide for their pupils, but the Roadshow offers a complementary collection of interactive activities to support practical learning:

“Hands-on exhibits [were the best part] as these give the chance for pupils to experience for themselves scientific ideas that they will not experience in a classroom and to investigate how different ideas work.” (9)

“[The pupils] also liked the fact that many of the activities were things that we were unable to do in class (due to lack of resources).” (30)

In addition, the presentations – and the balance of these with the hands-on activities – enhance the session for many schools:

“We felt that the whole programme really works, as it had the pupils engrossed in the presentation from the outset. The fact that they contributed so readily to the show was testament to what the presenters were doing.” (26)

The interactive exhibits are certainly the core element of the Roadshow from the schools’ perspective, extending the practical work done in the classroom, and they are greatly supported by the presentations in the provision of a complete scientific experience.

Continued

4.4. The changes that would improve the Roadshow

Figure 4: What changes would most help to improve the scheme? (Question 3 – part b)

Aspect of scheme	Specific aspect	% of respondents	No. of respondents
Presentations	Total references	44%	14 different respondents
	<i>Make them shorter / currently too long</i>	<i>16% of overall</i>	5
	<i>Climate Change presentation too advanced / less interesting than other talks / needs balance</i>	<i>13% of overall</i>	4
	<i>Make them more interactive</i>	<i>6% of overall</i>	2
	<i>Include more humour</i>	<i>3% of overall</i>	1
	<i>Remove Concorde reference in Senses</i>	<i>3% of overall</i>	1
	<i>Keep giving everyday examples of importance of science</i>	<i>3% of overall</i>	1
	<i>Include a Subject Choice presentation¹</i>	<i>3% of overall</i>	1
	<i>Include Biology/Chemistry demos</i>	<i>3% of overall</i>	1
Hands-on exhibits	Total references	16%	5 different respondents
	<i>More Chemistry</i>	<i>6% of overall</i>	2
	<i>Reintroduce bubble exhibit</i>	<i>6% of overall</i>	2
	<i>More Biology</i>	<i>3% of overall</i>	1
	<i>More Geology</i>	<i>3% of overall</i>	1
	<i>More Illusions / Senses experiments</i>	<i>3% of overall</i>	1
	<i>Place Bike and Heartbeat Monitor close to each other</i>	<i>3% of overall</i>	1
	<i>Worksheet for hands-on exhibits</i>	<i>3% of overall</i>	1
Restructure sessions	9%	3 (1: shorter; 1: longer; 1: “careers” at end)	
Ensure financing to maintain standards	3%	1	
Aim to cover some Curriculum for Excellence experiences and outcomes	3%	1	
None / Don't Know / Difficult to improve	31%	10 ²	

¹ The existing subject choice talk was delivered at this school, and the teacher admitted in their response that they hadn't witnessed everything and apologised if they missed this presentation.

² One respondent also positively observed there had been a reduction in the amount of research-based content in comparison with 2010/11.

The main element that invited suggestions for improvement was the presentations, with 44% of contact teachers making comments on these. There were, however, various ideas for this part of the session.

A number of respondents (16% of the total) noted that a reduction in the length of the talks would be beneficial, and 13% stated that the *Climate Change* presentation should be revised.

The *Climate Change* and *Senses* presentations were slightly reduced in length during the course of the programme, and – since no teachers at schools visited after 11th January (the 13th visit out of 32 in total) made a similar comment – there seems to have been some progress made towards this suggested improvement. Further work, however, needs to be done in developing research-based presentations at a more consistent level, suitable for this audience:

“The presentations are all equally worthwhile inserts to the whole event and should not be removed. Either lengthen the time spent with pupils or shorten the talks. A huge amount of valuable information was present in the Climate Change section, which could maybe be done in two parts.” (13)

Nearly a third (31%) of contact teachers offered no suggestions for improvement at all, which is far greater than the number of respondents who offered improvements related to the hands-on activities (16%). Within the ideas submitted for the interactive exhibits, not one was repeated more than twice, which implies that contact teachers do not see a significant gap in the activities offered.

“Difficult to improve on excellence.” (6)

Continued

4.5. An assessment of specific aspects of the SCI-FUN Roadshow scheme

A new style of question in comparison with the 2010/11 survey: teachers were asked to rate certain aspects, from initial organisation through to individual elements of the visit and supportive website materials. If any ratings were less than 5/10 (satisfactory), respondents were encouraged to clarify the reasons for their opinion.

Figure 5: How would you rate the following aspects of the SCI-FUN Roadshow scheme? (Qn 4)

Aspect (Adjusted scales)	0-2	3-4	5-6	7-8	9-10	Average	DK
Organisation							
Ease of organisation with SCI-FUN	0	0	0	13% (4)	88% (28)	9.38	0
Ease of organisation with school colleagues	0	3% (1)	16% (5)	44% (14)	38% (12)	7.91	0
Ease of organisation compared with preparing a school visit	0	0	6% (2)	13% (4)	72% (23)	9.10	9% (3)
Visit information on SCI-FUN website	0	0	6% (2)	6% (2)	75% (24)	9.11	13% (4)
Website materials							
Seniors' booklet (exhibit information for seniors)	0	3% (1)	3% (1)	16% (5)	59% (19)	8.73	19% (6)
Website materials for S1/S2	0	0	3% (1)	22% (7)	44% (14)	8.77	31% (10)
The visit sessions							
Senses presentation	0	0	0	9% (3)	81% (26)	9.41	9% (3)
Climate Change presentation	0	6% (2)	13% (4)	25% (8)	47% (15)	8.00	9% (3)
Subject Choice presentation	0	0	6% (2)	22% (7)	53% (17)	8.69	19% (6)
Hands-on exhibits	0	0	3% (1)	3% (1)	94% (30)	9.66	0
Overall experiences							
Overall experience for S1/S2 pupils	0	0	0	6% (2)	91% (29)	9.52	3% (1)
Overall experience for senior pupils	0	0	0	16% (5)	69% (22)	9.37	16% (5)
Overall experience for school staff	0	0	3% (1)	13% (4)	72% (23)	9.29	13% (4)

DK = Don't Know. Scale adjusted from original 0-10.

The sub-sections in figure 5 (on page 10) are the basis for the discussion that follows.

4.5.1. Organisation

The visit-organisation discussions with SCI-FUN staff are clearly very good (88% of respondents in highest rating bracket), and compare favourably with teachers preparing for a school visit (72% in highest range). The visit information on our website is highly regarded too with 75% rating this as 9/10 or more.

Respondents seem to experience more organisation issues with colleagues (only 38% in highest rating bracket). The main problems are anticipated to be securing the S1/S2 pupils from non-science lessons, as well as securing the senior pupils assistants from other classes:

“[A rating of 4/10 for organisation with colleagues] was not as a direct result of the Roadshow, merely due to the size of our school and coordinating seven sessions of pupils being out of class.” (22)

4.5.2. Website materials

The exhibit information booklet for senior pupils received a minimum rating of 9/10 from 59% of contact teachers, confirming that it is a useful support for the assistants that participate in the programme. 19% did not offer an opinion, which may be due to respondents not looking at it, and/or perhaps not passing this on to senior pupils.

The website materials for S1/S2 pupils were not as highly regarded, with only 44% of respondents offering ratings in the highest bracket. A sizeable number (31%) stated *Don't Know* to this element. This implies that many teachers are not using the materials with their pupils in class. We do not currently know if this is because:

- teachers do not need the supportive information;
- teachers are unaware that the information exists; or
- the material needs to be re-developed to make it more useful for classes.

4.5.3. The visit sessions

The data here supports the earlier statement (section 4.3) that the hands-on exhibits are the core attraction of the Roadshow, with 94% of respondents indicating the highest bracket ratings.

Of the presentations, the *Senses* is the best with 81% of respondents offering a rating of 9/10 or above.

The *Subject Choice* talk ranks well (53% at 9/10 or above), but almost a fifth of contact teachers offered no view (19%).

The *Climate Change* presentation is more variable: 47% rate this in the highest bracket, but 6% offer ratings at less than 5/10, which is the highest indication of dissatisfaction expressed in the responses to question 4. It is suspected that the approach of this presentation – focusing on topical science and research – will always mean it will be unfairly compared with the more interactive general-science presentation at the beginning of a session. Also, the pupils may be keen to spend more time on the hands-on exhibits:

“Content [of the Climate Change presentation] was good but came at the end of a busy session, so pupils were still excited about the exhibits and said that they would rather have had a wee bit more time with them.” (3/10) (19)

4.5.4. Overall experiences

These all received extremely high marks, indicating that S1/S2 pupils especially (91% in top bracket), but also senior pupils (69%) and school staff (72%), all benefit from the approach that the SCI-FUN Roadshow has adopted.

“The whole experience was just fantastic. A great thank you to all of the team at the SCI-FUN Roadshow.” (6)

4.6. An estimation of school visit funds in 2012/13

To aid our understanding of the funding situation in schools, respondents provided an estimation of their visit budget in the next academic year.

Figure 6: Please estimate how much you could afford to spend on school visits / visitors in 2012/13 without external assistance? (Question 5)

£0-100	£101-200	£201-300	£301-400	£401-500	£501-750	£751-1000	£1000+
13% (4)	16% (5)	25% (8)	28% (9)	16% (5)	0	0	3% (1)

All the additional comments emphasise the difficulties that schools are currently facing:

“Our budget is extremely tight so without sponsorship I would not be able to pay for SCI-FUN out of per capita [allocation].” (£0-100) (23)

“Budgets are likely to be slashed next year. Without extra school or outside funding, the Roadshow will become impossible to afford for individual departments.” (£201-300) (1)

After some clarification, the £1,000+ response was what this contact teacher felt was the case for the entire school; other teachers have therefore appeared to take a more departmental view towards this question, as originally intended when the question was designed.

The data shows that the current £300 visit fee is at about the right level, but this will remain difficult for smaller schools to meet due to their smaller budgets. SCI-FUN’s work in securing additional funding from the Holmes Hines Memorial Fund (for example) to subsidise small-school visits should continue.

4.7. The recommendation of the SCI-FUN Roadshow to other teachers

Figure 7: How highly would you recommend the SCI-FUN Roadshow scheme to teachers in other schools? (Question 6)

	0-2	3-4	5-6	7-8	9-10	Average
Strength of recommendation	0	0	0	6% (2)	94% (30)	9.69

The high proportion (94%) of those in the highest ranking band certainly implies a strong seal of approval for the SCI-FUN Roadshow. Word-of-mouth recommendations between teachers are a valuable method through which to raise the profile of any schools-engagement project, and this outcome is extremely strong. This continues the very positive endorsements that we have received to similar questions in recent years.

4.8. The interest in receiving another Roadshow visit

Figure 8: How interested is your school in hosting the SCI-FUN Roadshow again within the next two academic years? (Question 7)

	0-2	3-4	5-6	7-8	9-10	Average
Strength of recommendation	0	0	3% (1)	9% (3)	88% (28)	9.47

The 88% of respondents in the top rating bracket provides another strong endorsement of the Roadshow scheme. Additional comments support this yet further:

“We have had the Roadshow in school for many years now and have noticed a significant improvement in pupil uptake in the sciences since we started having it.” (18)

“As a science department we felt that it was a very worthwhile experience for all the pupils and we would like to try to make it a regular part of our S1/2 science experiences.” (10)

Several contact teachers felt it necessary to emphasise a potential funding issue within the optional comment box. This includes the 5-6 rating: this person gave very positive responses within other parts of the questionnaire, and also supplied the following comment alongside their rating for this question:

“As always, depends on the budget situation.” (5/10) (1)

4.9. The motivations for originally booking a Roadshow visit

Several options were provided in a randomised table of potential reasons with additional space for respondents to offer other motivations. Multiple statements could be selected. The outcomes are summarised in figure 9:

Figure 9: Why did you book the SCI-FUN Roadshow in 2011/12? (Question 8)

Statement	Response %	Response Count
To enrich the pupils' experience of the sciences	91%	29
As a result of your previous experience of the SCI-FUN Roadshow	81%	26
To support the pupils' subject choice process	75%	24
To support the general science objectives in the Curriculum for Excellence	38%	12
It is more convenient than arranging a science centre visit	34%	11
It is cheaper than arranging a science centre visit	28%	9
Other (please specify) – see below for details	16%	5
To support the Topical Science strand of the Curriculum for Excellence	13%	4
As a result of a recommendation	9%	3

Other; one each of: Distant from Science Centre / Fully-funded visit / Funding had to be used / SCI-FUN approach after school withdrawal / Links to local Science Festival

Providing an interactive science experience for pupils, which builds on the work done in class, is definitely a primary motivation for securing a SCI-FUN visit for the majority of respondents (91%), and their previous experience of the scheme (81%) would provide direct knowledge of what the Roadshow involves. 81% is a significant proportion, since five schools (16%) had never been visited before and most (if not all) of these teachers would not have witnessed the Roadshow scheme previously.

It is also clear that the subject choice process is an important consideration when deciding to book a Roadshow visit, with 75% of respondents including this factor as a personal motivation.

Although the majority of the hands-on exhibits – and all of the presentations – have direct links with the Curriculum for Excellence, fewer than half of the respondents (41%) consider this as a reason for booking a visit. Further questioning would be required to determine whether teachers were unconcerned about the links to the curriculum when booking the Roadshow, or if most teachers believe that the scheme is not linked to the curriculum.

4.10. The use of the SCI-FUN website

The options were provided in the style of the previous question, and the key results are set out in figure 10:

Figure 10: Have you (and/or your school colleagues) used the SCI-FUN website for any reason? If so, what was it used for? (Question 9)

Statement	Response %	Response Count
Further information about the SCI-FUN Roadshow	66%	21
Accessing the seniors' booklet	41%	13
Information about the visit schedule	34%	11
Accessing online materials for follow-up work	31%	10
Information about funding opportunities	9%	3
I have never used the SCI-FUN website	9%	3
Other (please specify)	6%	2

Other; one each of: To see the visiting team / Did not look at website – have organised visit previously

An encouraging two-thirds of respondents (66%) have looked at the website for further details about the Roadshow scheme, but fewer than half (41%) accessed the seniors' booklet and fewer than a third (31%) looked at the online materials for follow-up work with the S1/S2 pupils.

To potentially improve the overall impact of the scheme, it would be useful to enquire further about what supportive materials schools would be interested in for use before and after a visit, and in fact, whether teachers have a reasonable opportunity to use these materials within the classroom.

Continued

4.11. Additional comments

At the conclusion of the questionnaire, respondents were provided with a final opportunity to provide further comments if they hadn't been able to provide these within any of their earlier responses; the majority of these were very positive. A selection of final comments is provided below:

"An excellent and professional visit from a team of highly skilled science communicators. They have a real sense of understanding of how schools and teachers work and aim to fit into our constraints to make it the best possible experience for our S2 pupils. Our primary visitors had a great time and were very impressed by the presentations and the activities offered. Our S6 pupils were excellent ambassadors for our school and this was one of the few opportunities for good scientists to shine in a scientific environment. SCI-FUN is great!" **(21)**

"All I can say is thanks for a great experience. We have a renewed interest in science in the S1 classes and the talk on taking two sciences has planted seeds which we must now nurture over the next year so that they do indeed choose two sciences as part of their S3 course." **(10)**

"As always the SCI-FUN Roadshow has enthralled the pupils and sent them away with a real zest for science." **(26)**

"Another excellent visit from SCI-FUN. Our S2 pupils have been enthused and enthralled. SCI-FUN continues to make a valuable contribution to the S2 options process. Extremely positive response from both S2 pupils and senior helpers." **(25)**

"The SCI-FUN Roadshow provided our pupils with the type of experience not available locally for a rural school like ours. Excellent time had by all!!!" **(2)**

"Great event. The pupils were engaged during the presentations which had good images and visuals, were varied and interactive. The pupils enjoyed the exhibits and asked lots of questions. However, there was not enough emphasis on chemistry! Exhibits are mostly biology and physics. It might be possible to incorporate some demos into one of the shows? But chemistry was included in the subject choice presentation." **(8)**

"A really superb experience for Senior pupils as well as the whole of S1 and S2. It also made good use of our facilities in the Ambition Hall." **(19)**

Continued

5. Further Analysis

5.1. Does the Roadshow meet its primary aims?

The SCI-FUN Roadshow appears to deliver on its aims of encouraging more pupils to consider careers in STEM and to appreciate science in their everyday lives, since every respondent indicated their belief that the Roadshow scheme has increased their pupils' interest in studying science further (section 4.2).

5.2. Which is the most important part of the scheme?

There is very significant appreciation for the hand-on exhibits within the SCI-FUN Roadshow, and it is this element which is core to the entire programme. Sections 4.3 and 4.5 particularly highlight this, with 84% of contact teachers stating the hands-on activities were the best part of the scheme in response to an open-ended question, and 94% of respondents rating the exhibits at the highest level.

5.3. What improvements could be made to the visit sessions?

There is no obvious aspect that could be changed that would make a huge improvement to the scheme: 91% of respondents rated the overall experience for the S1/S2 pupils as 9/10 or 10/10.

Some consideration could be made on the balance of the sessions (time for the hands-on exhibits against time for the presentations), since 16% of respondents stated that the presentations were longer than necessary (section 4.4), although it should be stated that 13% felt the overall session (including balance) was the best bit of the Roadshow (section 4.3).

Additional thought on the research-focused presentation may be worthwhile. Some respondents (13% – section 4.4) felt the *Climate Change* presentation wasn't suitable (too advanced / less interesting / needing balance), whilst one made a comment stating that there was effectively enough material for two talks. In addition, in section 4.5, this presentation was the lowest-ranked part of the session (47% rated at the highest level).

5.4. What improvements could be made in other areas?

A relatively low proportion of respondents (41%) agreed that supporting the curriculum was a motivation in securing a Roadshow visit (section 4.9). The questionnaire does not investigate whether this is due to a belief that the scheme does not support the curriculum, or merely that this is not a main motivation. In any case, increasing the awareness of the curriculum support that is offered by the Roadshow should be worthwhile.

Also, fewer than a third (31%) of respondents use the website to access materials for follow-up work (section 4.10). Again the reasons for this are unclear and would require further investigation to identify the key factors. For example, are they unsuitable, or do teachers not have the opportunity to use the materials during class time? A re-structuring – or just raising the profile – of the current materials to make these easier to spot, may support teachers in using the information more often.

Continued

5.5. What are the main issues for schools interested in return visits?

The quality of the SCI-FUN scheme is highlighted through the fact that a clear majority of respondents (94%) provided the highest ratings for recommending the Roadshow to other teachers (section 4.7), as well as being extremely interested in a return visit (88% – section 4.8).

The main issue would therefore not be the quality of the scheme, but the funding needed to secure a visit, with over half of respondents (53%) estimating that they could only afford to spend £300 or less on school visits in 2012/13. £300 was the visit fee in 2011/12.

6. Conclusions and Recommendations

The feedback received from contact teachers strongly indicates that the SCI-FUN Roadshow is an effective scheme in encouraging 11–14 year old pupils to continue studying science at the Standard Grade level and beyond.

The hands-on exhibits are clearly an immensely strong element of the scheme, having been identified as the key part of the Roadshow. The presentations are well-received – especially the *Senses* show – although some revision during the development of future research-based talks for this audience should be considered. Slight changes to the balance of a session – more time for the exhibits, and less for the presentations – may produce a more highly regarded offering for schools.

Away from the sessions themselves, further investigations should be undertaken to discover the reasons why relatively few contact teachers use the supportive materials available through the website: are they unsuitable, or are they unnecessary? In the interim, the content and/or location of these web-pages should be reviewed and potentially amended, to encourage teachers to access these more often. In addition, highlighting how the Roadshow scheme links to the Curriculum will only be beneficial.

These areas of improvement are, however, relatively minor points given the extremely positive ratings and comments that have been submitted by the respondents.

It is clear that the SCI-FUN Roadshow provides an excellent experience for the audiences that it visits.

7. Limitations of the Study

To obtain a more accurate assessment of the scheme, discussing the responses with teachers would be beneficial.

More importantly, this study only includes the views of 32 teachers. It would be good to obtain the pupils' view of the experience to see if the opinions expressed by the teachers in this evaluation were genuinely representative of the pupils' views.

An alternative method to measure the Roadshow's impact would be to investigate the number of science subjects chosen by pupils following a visit. It is suspected that a pure data analysis will not easily yield any useful information, due to the number of other factors that will inevitably play a role in the decisions of pupils. Focus group interviews, potentially with the support of questionnaires, may provide a useful assessment of any influence.

An evaluation project began in May 2012, focusing on pupil questionnaires and interviews, along with an initial study of subject choice data. The results of this project will be reported separately.

Appendix 1: Overview of the SCI-FUN Roadshow scheme

Format:

The SCI-FUN Roadshow has been designed and developed to take the experience of a science centre to secondary schools across Scotland. Every session – for up to sixty pupils and lasting for a double school period (1 hour and 45 minutes approximately) – comprises:

- a general science-based presentation (*The Senses Show* in 2011/12);
- substantial time to interact with over forty exhibits;
- a subject choice talk linked to careers opportunities; and
- a research-based presentation supporting the *Topical Science* strand of *Curriculum for Excellence* (*Climate Change* in 2011/12).

Visited schools may host evening sessions to which the local community can be invited.

Aims:

The aims of the Roadshow scheme are – in conjunction with the school curriculum – to encourage more young people to consider STEM-based careers, and to appreciate the role of science in their everyday lives.

Objectives:

The main objectives of the SCI-FUN organisation are to:

- present an innovative science experience for 10-14 year-olds, complementing their school courses;
- take contemporary research topics into schools and the public realm;
- enhance awareness of the relevance of science to our society;
- promote enthusiasm and interest in science within the pre-Standard Grade/National Qualifications cohort;
- provide materials to support science teaching through the Roadshow programme and the website;
- bring interactive science to remote areas; and
- provide an opportunity for senior pupils to experience a leadership role as encouraged by the *Responsible Citizens* capacity of the *Curriculum for Excellence*.

Appendix 2: Evaluation questions 2011/12; online format

Page 1: Introduction

Welcome to the feedback form for the SCI-FUN Roadshow scheme. The views and opinions that you provide in response to this questionnaire will be included within our 2011/12 feedback report. Some specific comments may be reproduced in the report and identified in the following way:

----- Job Title, A Secondary School, A Local Authority -----

However, if you are happy for your name to be used alongside your views, please write your name in the space provided in question 10. Also, if you have any further comments to make that you have not been able to include within any other part of the questionnaire, please include these in the space provided in question 10.

Many thanks for completing this feedback form; your views are greatly appreciated and will help us to further develop the Roadshow scheme.

Page 2: Questions 1 and 2

1. Using the following scale, how would you assess the knowledge and professionalism of the staff that visited?

Rating scale question

Not at all (0) / Moderately (5) / Extremely (10) / Don't know (-)

11 options: 0-10, which provides an average rating

Knowledgeable and *Professional* categories on two separate lines

Additional box: *Further comments (optional)*

2. Using the following scale, in your opinion, how has the SCI-FUN Roadshow visit affected the S1/S2 pupils' interest in studying science subjects further?

Rating scale question

Greatly Decreased (0) / No Change (5) / Greatly Increased (10) / Don't know (-)

11 options: 0-10, which provides an average rating

Level of interest rating only

Additional box: *Further comments (optional)*

Page 3: Question 3

3. What was the best part of the Roadshow programme for the S1/S2 pupils and why? What changes would most help to improve the scheme?

(Please note: there is no limit on the length of comment you can provide in the boxes below.)

Multiple textbox question

Best part of Roadshow scheme:

How to improve the Roadshow scheme:

Page 4: Question 4

4. How would you rate the following aspects of the SCI-FUN Roadshow scheme?

Rating scale question

Options:

- Ease of organisation with SCI-FUN
- Ease of organisation with school colleagues
- Ease of organisation compared with preparing a school visit
- Visit information on the SCI-FUN website
- Seniors' Booklet - exhibit information for Senior pupils
- Website materials for S1/S2
- The Senses presentation
- The Climate Change presentation
- The Subject Choice presentation
- The hands-on exhibits
- Overall experience for S1/S2 pupils
- Overall experience for Senior pupils
- Overall experience for school staff

Very Poor (0) / Satisfactory (5) / Excellent (10) / Don't know (-)

11 options: 0-10, which provides an average rating

Additional box: *If you rated any aspect of the Roadshow scheme as less than satisfactory, we'd appreciate it if you could provide more detail regarding your answer in the space below:*

Page 5: Questions 5, 6 and 7

5. Please estimate how much you could afford to spend on school visits / visitors in 2012/13 without external assistance? (Please be aware that there is funding advice on the SCI-FUN and British Science Association websites. Please contact us if you have difficulty finding this information.)

Multiple Choice (Only One Answer) question with options set out in two columns

Options:

- £0-100
- £101-200
- £201-300
- £301-400
- £401-500
- £501-750
- £751-1000
- £1000+

Additional box: *Further comments (optional)*

6. How highly would you recommend the SCI-FUN Roadshow scheme to teachers in other schools?

Rating scale question

Would not recommend (0) / Moderately recommend (5) / Highly recommend (10)

11 options: 0-10, which provides an average rating

Strength of recommendation rating only

Additional box: *If you would recommend the Roadshow scheme at a less than moderate level, we'd appreciate it if you could provide more detail regarding your answer in the space below:*

7. How interested is your school in hosting the SCI-FUN Roadshow again within the next two academic years?

Rating scale question

Very Low (0) / Moderate (5) / Very High (10)

11 options: 0-10, which provides an average rating

Interest level rating only

Additional box: *Further comments (optional)*

Page 6: Questions 8 and 9

8. Why did you book the SCI-FUN Roadshow in 2011/12?

(Please tick all that apply.)

Multiple Choice (Multiple Answers) – Choices in one column

Options (randomised, including last option):

To support the general science objectives in the Curriculum for Excellence

To support the Topical Science strand of the Curriculum for Excellence

To support the pupils' subject choice process

To enrich the pupils' experience of the sciences

It is more convenient than arranging a science centre visit

It is cheaper than arranging a science centre visit

As a result of your previous experience of the SCI-FUN Roadshow

As a result of a recommendation

Other (including box for more details) – listed as answer choice

9. Have you (and/or your school colleagues) used the SCI-FUN website for any reason? If so, what was it used for?

(Please tick all that apply.)

Multiple Choice (Multiple Answers) – Choices in one column

Options (randomised, not including last option):

Information about the visit schedule

Information about funding opportunities

Accessing the Seniors' booklet

Accessing online materials for follow-up work

Further information about the SCI-FUN Roadshow

I have never used the SCI-FUN website

Other (including box for more details) – listed as answer choice

10. Finally, your views and opinions will be included within our 2011/12 feedback report. If any specific comments are reproduced in the report, they will be identified in the following way:

----- Job Title, A Secondary School, A Local Authority -----

Please use the space below to:

1. Confirm the school you represent.
2. Provide your name, (but only if you agree for your name to be used in addition to the basic identification label described above).
3. Supply any additional comments you wish to make.

Many thanks for completing our questionnaire. This information is vital in allowing us to accurately report back to our funders, and, more importantly, to assess how we could improve the scheme for future tours.

Free text box provided for the response.

Weblink to questionnaire: <http://www.surveymonkey.com/s/WWK5LTP>

Appendix 3: Details of the schools' questionnaire respondents

Table A: The 32 schools that were visited in the 2011/12 programme. They are listed in the order of their response date. Following the wishes of some respondents, some names have not been published in this table.

	Respondents' name and/or job title	School	Region	Visit date	Response date
1	Anne Cain, PT Chemistry	Kinross High School	Perth and Kinross	24-25/10/11	2/12/11 3:38pm
2	Raymond Henry, PT Curriculum (Maths and Sciences)	Dalbeattie High School	Dumfries and Galloway	31/10-1/11/11/11	4/12/11 8:13pm
3	PT Guidance	Millburn Academy	Highland	3-4/10/11	5/12/11 8:02am
4	Neil Hannah, Teacher of Physics	Turnbull High School	East Dunbartonshire	23/11/11	7/12/11 8:55am
5	Enterprise and Employability Officer (EEO)	John Paul Academy	Glasgow	22/11/11	7/12/11 2:38pm
6	Brian R Johnston, PT Physics	Elgin High School	Moray	6-7/10/11	12/12/11 3:07pm
7	Ian Baldry, PT Science/English	Golspie High School	Highland	5/10/11	19/12/11 12:06pm
8	Dr Katy Alder, Teacher of Chemistry	Penicuik High School	Midlothian	12-13/12/11	20/12/11 8:26pm
9	Angela Davidson, Teacher of Chemistry	St Thomas of Aquin's HS	Edinburgh	19/1/12	23/1/12 8:19am
10	Pamela Sinclair, Teacher of Physics	Beath High School	Fife	16-17/1/12	23/1/12 9:04am
11	Anne Lyall, Chartered Teacher	James Gillespie's High School	Edinburgh	10-11/1/12	23/1/12 9:41am
12	Clive Hembury, PT Chemistry	Boroughmuir High School	Edinburgh	12-13/1/12	24/1/12 9:36pm
13	Stephen McLaughlin, Head of Science Faculty	Queen Margaret Academy	South Ayrshire	3-4/11/11	27/1/12 3:12pm
14	L. Chase, Probationer Biology Teacher	Jordanhill School	Glasgow	25/1/12	30/1/12 8:50am
15	PT Science	Doon Academy	East Ayrshire	2/11/11	30/1/12 10am
16	John Woods, PT Chemistry	Woodfarm High School	East Renfrewshire	24-25/11/11	31/1/12 8:57am
17	Head of Chemistry	St George's School for Girls	Edinburgh	24/1/12	2/2/12 2:59pm
18	PT Science	Holy Rood High School	Edinburgh	26-27/1/12	6/2/12 1:59pm
19	Lynn Appleby, PT Biology	Braeview Academy	Dundee City	2-3/2/12	16/2/12 12:28pm

	Respondents' name and/or job title	School	Region	Visit date	Response date
20	Rhona Duncan, PT Physics	Menzieshill High School	Dundee City	1/2/12	16/2/12 1:21pm
21	Liz Anne Jaffray, PT Physics	St Ninian's High School	East Dunbartonshire	9-10/2/12	17/2/12 3:25pm
22	Lorna Cameron, PT Chemistry	Holyrood Secondary School	Glasgow	6-8/2/12	21/2/12 9:24pm
23	FPT Science	Alva Academy	Clackmannanshire	27-28/2/12	8/3/12 8:54pm
24	Janette Stark, Pupil Support Coordinator	Linwood High School	Renfrewshire	22/2/12	9/3/12 12:03pm
25	Richard Ford, PT Physics	Bearsden Academy	East Dunbartonshire	20-21/2/12	12/3/12 10:43am
26	John Meharry, Technician	Beaconhurst School	Stirling	29/2/12	13/3/12 11:31am
27	Mrs Jeanette Brennan, PT Chemistry	Belmont Academy	South Ayrshire	23-24/2/12	14/3/12 2:47pm
28	PT Chemistry	Newbattle Community HS	Midlothian	14/12/11	22/3/12 9:37am
29	Peter Redshaw, Faculty Head Science	Thurso High School	Highland	15-16/3/12	23/3/12 2:10pm
30	Audrey McAuley, PT Science	St John's RC Academy	Perth and Kinross	1-2/3/12	26/3/12 10:44am
31	Sarah Reid, Science Teacher	Wick High School	Highland	13-14/3/12	26/3/12 9:16pm
32	Mrs Lindsey Martin, Faculty Head of Science	Meldrum Academy	Aberdeenshire	19-20/3/12	16/4/12 8:36am

Note: PT = Principal Teacher / FPT = Faculty Principal Teacher