Progress Report

The Progress Report is made up of 4 sections:

1. Progress Report
2. Outstanding Actions from previous progress meetings
3. Update on Commitment / Expenditure
4. Update on Milestones / Outputs / Outcomes

A Progress Report must be supplied with every invoice form submitted.

Sponsor Name:	Institute of Physics
Project Name:	Lab in a Lorry – Cymru
Project Reference:	30
Claim Period & Invoice no.	April to June 2013 Invoice 2
Project End Date:	30 June 2013
Total Project Cost:	£29,709.57 (compared to award of £34,000)

1. Progress Report – Please provide details of Project progress and achievements to date together with an indication of future activity. Please also use this section to highlight any difficulties being encountered on the Project and how they are being addressed.

Progress and Achievements

Lab in a Lorry spent the period April to June 2013 in schools, delivering the project that had been planned and booked during the previous three months. (Please see the progress report for details of the planning and booking process.)

During the delivery period 23 April to 28 June 2013 Lab in a Lorry:

- Reached 2933 pupils.
- Visited 14 school locations and had 2 additional schools take part.
- Recruited 133 potential new volunteers, from which 81 individuals gave 134 days-worth of volunteering.

During the tour, we spent 31 days in schools and averaged 95 pupil visitors per day. The full break down of the schedule is in the table below.

Following every visit, teachers were sent links to our follow-up experiments to enable them to build on the visit when back in class. These are available via the experiments page on our website: www.labinalorry.org.uk/experiments.cfm.

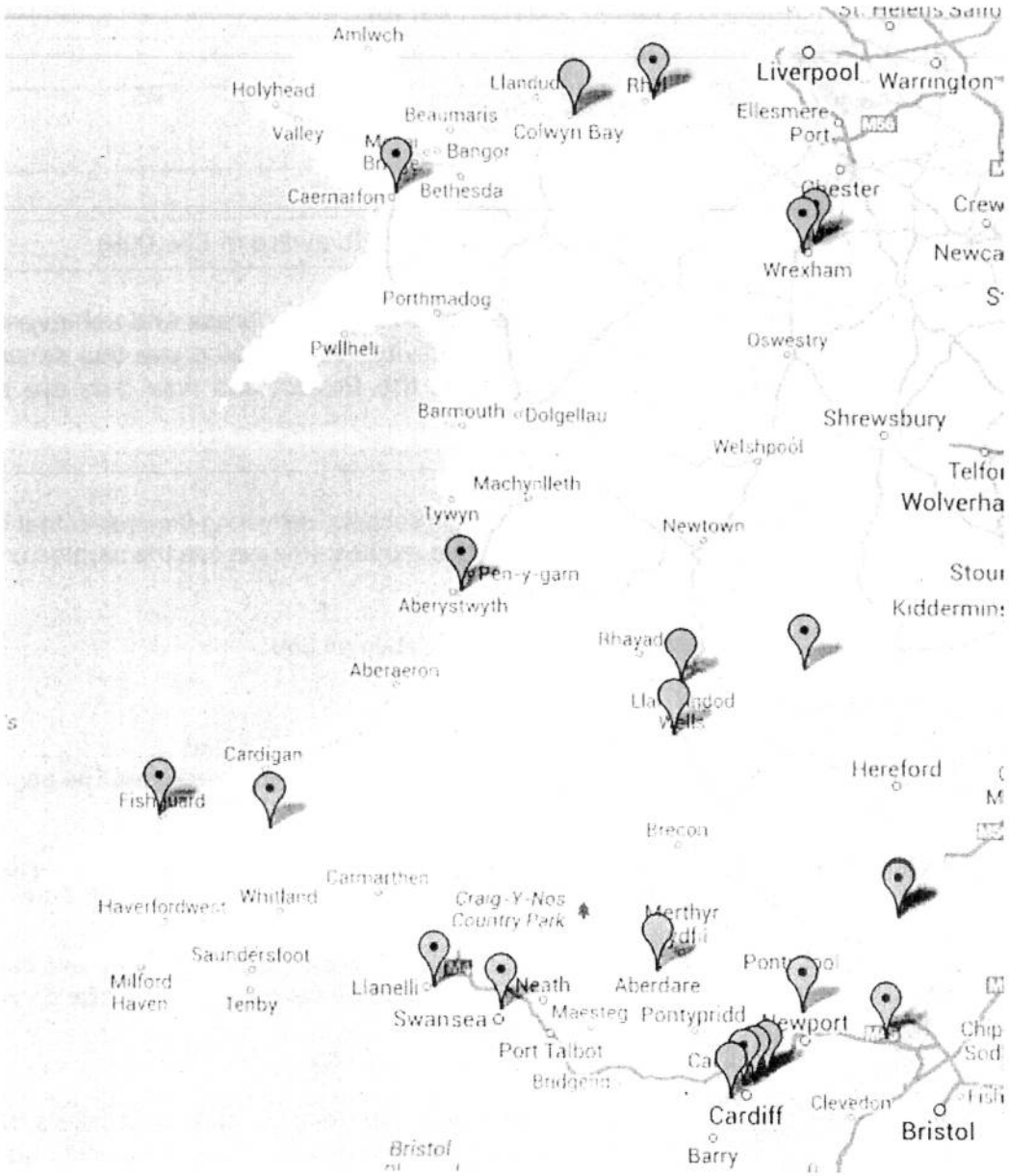
Cancellations

Three working days in school were lost due to events outside of our control. St Telio's CIW High School, Cardiff was due to host the opening event from 16 to 18 April. However building works meant we could not fit onto their site. We tried to find an alternative school, but due to the factors outlined in the previous progress report we were unable to fill the dates. Had we

not lost these three days, we would have exceeded the target of 3000 pupil visitors during the tour and visited 15 individual locations.

Geographical Spread

The map below shows the locations of all our visits during the tour. Host schools (marked with green pins) were identified through a mixture of requests received from Welsh schools over the past few years and from working with the IOP Teacher Network and STEMNET contract holders, See Science, to identify schools that would benefit from hosting Lab in a Lorry. This included schools that are geographically isolated, have relatively low participation rates for A-level physics and/or tend not to take advantage of existing STEM enhancement and enrichment activities. Schools that were offered an event but were unable to host are marked with purple pins. You can explore the map in more depth by following this link: http://goo.gl/maps/Dofl6.



Tour schedule

The table below lists the full tour schedule and numbers of students for each school.

Date	Venue	No. of students	Notes
23-25 April	Pentrehafod School, Swansea. #	270 (130 boys, 140 girls.)	All year 8, one class from year 9 and one from year 11.
30 April - 1 May	Caldicot School. #	180 (87 boys, 93 girls.)	Majority of year 8 + 3 year 12 pupils who wanted to come on board.
2-3 May	Llantarnam School. *	194 (97 boys, 97 girls.)	Selection from years 7-9.
7-9 May	Ysgol Clywedog, Wrexham. *	210 (111 boys, 99 girls.)	Half of each year group. 68 year 7s, 73 year 8s, 69 year 9s.
15-17 May	Penglais School, Aberystwyth. #	209 (101 boys, 108 girls.)	All year 7, one class from year 8 and one from year 9.
21-23 May	Coedcae Comprehensive School, Llanelli. #	337 (164 boys, 174 girls.)	Selection from years 7-9.
5 June	John Beddoes School, Presteigne. #	112	All year 9, half year 8 and half year 7.
6-7 June	Ysgol Rhosnesni, Wrexham. *	271 (156 boys, 115 girls.)	Half years 7-9. Year 7: 41 boys, 36 girls. Year 8: 53b/41g. Year 9: 62b/38g.
11-12 June	Haberdashers' Monmouth School for Girls, Monmouth. *	202 (all girls.)	All years 7-9.
12 June	Monmouth School.	36 (all boys.)	Invited by HMSG and sent two classes from year 9 to their event.
13-14 June	Cathays High School, Cardiff. #	183 (93 boys, 90 girls.)	Most of years 7 and 8, one class from year 9.
18-19 June	Ysgol y Preseli, Crymych. *	179 (85 boys, 94 girls.)	All year 8.
20-21 June	Ysgol Bro Gwaun, Fishguard. *	190 (93 boys, 97 girls.)	All year 7 and 8. Plus one class from year 6 from feeder primary school.
25-26 June	Ysgol Syr Hugh Owen, Caernarfon. #	180 (76 boys, 104 girls.)	Selection from years 7-9.
27-28 June	Rhyl High School. #	180 (90 boys, 90 girls.)	Selection from years 7-9.
Grand total: 14 host venues + 2 visiting schools. 2933 students.			

* School had a request on file
\# IOP identified school

Evaluation

The tour as a whole was very well received by all. At the end of most visits, teachers asked us if we could return to their school next year, showing the positive perception they had of the event and how much they valued the visit.

After each visit, teachers were asked to provide feedback using our standard form (see Appendix 1). The table below is a summary of the feedback received:

Question	Scores out of 4 (13/15 schools responded)				Average
Score	*4*	*3*	*2*	*1*	
Quality of liaison and advance planning	13				4.0
Quality of presentation given by volunteers	7	6			3.5
Adequacy of time given to pupils to practice experiment	10	2	1		3.7
Quality of Lab in a Lorry facilities	13				4.0
Overall perception of this event	13				4.0

General comments from teachers

Feedback is generally very good, although there is a sometimes a perceived lack of time on board the Lab and the quality of the volunteers can be a concern.

The amount of time each class spends on board the lorry is dictated by the timetable the school provides. We explain the time needed for each experiment in our pre-event information pack, but quite often the science teacher has to follow the school timetable and take pupils out of science classes only. This limits their ability to produce a special timetable for the day and, in so doing, enable the students to spend a little longer on the Lab and do all three experiments (this would require a session time of 75 minutes). This also explains why in some cases classes from outside of years 7 and 8 came on board. Some schools will produce a timetable with shorter sessions in order for more pupils to participate. Teachers are not always allowed to remove classes from lessons and so rather than have no session running we allow them to use it for older students.

Our volunteers come from a wide variety of backgrounds and have a range of experience, but they all kindly give up their time to help us run Lab in a Lorry. They are asked to lead the children through the experiments and allow them to explore it for themselves, but the quality of presentation can vary. We work closely with all volunteers, especially first-timers, to build their confidence and skills, but this is a process that can take some time. In the main, our volunteers are very well regarded by teachers and the narrative feedback shows that teachers are pleased to have volunteers in school from a variety of backgrounds to act as role models for their pupils.

Below is a selection of teacher comments from the feedback forms (all forms available on request):

"I was very impressed with the whole experience. The administration was very concise and the details given beforehand were strictly adhered to regarding arrival times etc. The coordinator was extremely efficient and enthusiastic about the whole project and ensured that both days ran very smoothly. The volunteer presenters again were friendly and displayed their enthusiasm for the work. Their contribution is very much appreciated. Each presenter managed to deliver in an informative yet informal manner that gave pupils the confidence to ask their own questions." *, Ysgol Syr Hugh Owen*

Many pupils who were not invited asked when they could visit the Lorry. Staff were intrigued by it and many asked about what was going on." , Rhyl High School.

"Very well organized and excellent communication before and during the event. The lorry fitted very well outside the Science Building and was therefore prominent to all the school. Older pupils wished they could have had a chance to go inside too. We gained some ideas to copy for use at school, e.g. the box of unknown items that we can use with our endoscope and get pupils to find and identify them, and also to make a safe box in which we can try to shatter a wine glass." Haberdashers' Monmouth School for Girls.

"It was a very rewarding and worthwhile event for both pupils and teachers involved. If possible I would like to arrange a repeat visit, and possibly for longer so that more pupils could experience the experiments on the lorry. Overall, it was a fantastic couple of days, and my sincerest thanks go to James Bamford for all his hard work in setting up and running the event." , Coedcae School.

"Was really worthwhile – gave the pupils an opportunity to apply their learning, also identified able pupils and gave them an opportunity to be stretched." , Caldicot School.

"It was certainly eye catching grabbed a lot of attention from the pupils. The ones who visited it loved it and it has certainly provoked discussion about the experiments." Ysgol Clywedog.

"I was really impressed with the set up and having local people help out was great. The presentations were a good length of time and kept the pupils engaged. Small groups meant it was very hands on and I was pleased that they were so accommodating about the size of the group so a whole class could visit at one time." , John Beddoes School.

"During a Carmarthenshire Head' of Science meeting, I was told that the Lab in a Lorry was excellent and well worthwhile; so when we had the opportunity of a visit, I was keen to take it up. My expectations were high but the actual event exceeded those expectations. The atmosphere was exciting with well-run demonstrations, pupils were talking about the experience all around the school – there was a buzz in the air about science and the Lab in a Lorry." Head of Science from Coedcae School.

Pupil comments

We ask the pupils when they enter the lorry what they think about science in general and responses vary from "cool" to "boring" and a very common comment is that they like doing experiments but not the writing down. Generally by the end of the session, the vast majority of pupils have relaxed, been engaging with the volunteers and the experimental kit and enjoyed the freedom to do the experiments for themselves.

We always tell them that they will only get time to do two of the experiments, but they are usually so wrapped up in the experience that by the end they automatically go to the third section. As mentioned previously, time on board the lorry is dictated by the times we are given by the teachers, but not doing everything also gives them something to talk about with their friends after a session and they can also work with our post-visit experiments to explore some of the concepts in the experiment they did not get to do.

We ask teachers to include any pupil feedback on the evaluation forms and below is a selection of comments given by the pupils who had the Lab in a Lorry experience:

"Pupils commented on how much fun it was to take part and that it helped them to understand light and sound in more detail. They were surprised at how many jobs use physics in everyday life."
, *Rhosnesni High School.*

Pupils from Ysgol Bro Gwaun:
"Banging."
"Awesome."
"Much better than spending time in class!"

"Given the unusual surroundings of the laboratory, the pupils certainly felt privileged to be given the opportunity to partake in the activities. They invariably enjoyed the experience and were certainly inspired by the nature of the experiments onboard. They were extremely impressed by the resonating glass experiment. They very much appreciated the fact that the presentations were given to small groups, enabling individuals to partake in the activities and to be given individual attention."
Ysgol Syr Hugh Owen.

Pupils from Haberdashers' Monmouth School for Girls:
"It was really nice to learn about new things that we don't learn about in lessons."
"Interesting with new technology was fun."
"Educational yet great fun."
"I thought that Lab in a Lorry was very good, but I felt that we needed more time. The activities were fun and very understandable. All the members of staff were very welcoming and they were very good with explaining the facts of Lab in a Lorry. Altogether the trip was very good."
"It was good to get hands-on with the equipment."
"It was really good and the people were really nice. It was very informative and interesting but we did not have enough time to do all of the activities which was disappointing."
"It was really exciting to do some different experiments. I most enjoyed the key-hole surgery on the body."
"I learnt new topics in the lorry which was enjoyable and interesting, although we did not have time to finish all the activities in the lorry."

"Many pupils said that it was the highlight of their year, and that they'd be interested in doing afterschool activities associated with STEM/STEAM as a direct result of the visit. said 'it inspired him to focus more on his science' It has also led to a recent visit to a Teen Tech Wales event which in turn resulted in one of our pupils getting through to the UK finals for Science journalism in the Royal Society, London. As well as an on-going commitment to more Science activities."
, *Pentrehafod Comprehensive School.*

"Pupils told me "it was really good", "I enjoyed it". The most worthwhile feedback was listening to their conversations with friends "did you see the one with the glass moving?", "which ones did you do?" hearing the enthusiasm with which they were talking about science was incredible. Staff teaching other subjects have also reported back to me that pupils had been telling them how much they had enjoyed Lab in a Lorry." *Head of Science, Coedcae School.*

Pupils from Coedcae School:
"It was a fab Lab!"
"It was really interesting."
"I've learnt how to play wine glasses in restaurants!"

"Pupils were all really positive – many came up afterwards to say how much they had enjoyed the experience." , *Caldicot School.*

"Loads of pupils who could not visit asked if they could – the physical presence of the lorry was exciting. One group of year 9 who only did one experiment were really disappointed that they could not come out again and complete a second one." *, John Beddoes School.*

Pupils from Ysgol Clywedog:
"It was a like a Tardis!"
"Amazing resources"
"It was really good, it was excellent in fact!"
"The volunteers were really friendly."
"The best science lesson ever!"

Volunteers

Lab in a Lorry has been in Wales before, but it visited only a handful of schools over five years ago and we were therefore starting from scratch with volunteer recruitment. Overall, 133 people registered their interest in volunteering with 24 of these coming from outside of Wales. Not all these people were able to actually volunteer during the tour but during the term 81 individuals gave 134 days of volunteering.

We recruit our volunteers from a variety of sources. We have IOP members across Wales and IOP contacts at university physics departments, so we used them to inform not only the physics staff and students, but also the other science and engineering departments, as well as careers and voluntary services provided by universities.
We also contacted local volunteering centres after using them successfully in other regions. This provided enhanced awareness of Lab in a Lorry among potential volunteers and worked well due to the relative lack of scientifically based volunteering opportunities normally advertised on these networks. It has also allowed us to link with the national volunteering website "Volunteering Wales", along with the UK wide "ivo" and "vInspired" websites to advertise the opportunity.

Careers Wales were kept informed with regards volunteer recruitment and which schools we were visiting. They have offered to help with some longer term evaluation of Lab in a Lorry by tracking pupils' experiences, thoughts and memories of the project when they visit the schools we have in future. We will follow up on this offer over the coming months.

We always encourage involvement from local industries, with many providing multiple volunteers as a way of engaging effectively with their local community. Many companies are already involved in the STEM Ambassador scheme and we worked closely with the STEMNET contract holder, See Science, to recruit volunteers. We also encourage any volunteers who are not already signed up to join the scheme after they have been on the Lab. This reciprocal arrangement works very well. The local STEMNET contract holders are happy to support us and Cerian Angharad from See Science said:

"Ambassadors we spoke to said they enjoyed the opportunity to be part of Lab in a Lorry. They felt that pupils who had been given the opportunity to participate in the programme had benefited from both the experience of engaging with the experiments as wells as speaking to Ambassadors from a wide range of STEM careers. See Science STEMNET Contract Holders in Wales were delighted to be part of the project and felt that both Ambassadors and schools had benefited from the tour."

Some schools asked for their senior students (sixth formers) to be involved. At quite a few of the events they came on board for a short time and simply observed the sessions and joined in a little with the younger pupils. However at Llantarnam school three sixth formers came for the whole event when they were not in class and assisted the volunteers before then

presenting the experiments themselves. This provided them with a great opportunity to work alongside practising scientists and engineers and to develop their communication skills.

The diversity in volunteers that our wide-ranging volunteer recruitment activity generates is welcomed by teachers. They often comment that they like the variety of backgrounds the volunteers have as this helps to show that scientists are a variety of ages, of both genders and from all cultural backgrounds. The range of companies represented by the volunteers also shows students the range of options they have to choose from and the variety of industries that a scientific career can take them to.

Volunteer feedback

At the end of the tour, we invited all our volunteers to take part in a survey to find out what their experience had been like, the most effective methods of recruitment and to assess any critical feedback and make changes where necessary.

Fifteen people responded and below is a selection of the responses to the volunteer survey:

Why did you want to get involved with Lab in a Lorry?

"It sounded like a fun and interactive way to engage students in physics."

"I hold a Degree in Education minoring in Science so I was interested immediately and knew I wanted to help as they might not get as many volunteers as people seem scared of Maths and Science for some reason. I knew I would be able to not only give something to a volunteer organisation but to remind myself how much I enjoy science."

"Just help young people to consider STEM subjects and related careers."

"I enjoy science based subjects and inspiring children."

If you enjoyed the experience can you tell us why?

"Something totally different and nice to deliver to young people."

"It was well lead and we were given enough information to feel confident but left enough scope to make it our own as well."

"Everything was laid out clearly for the volunteers to follow, the children were all engaging, the volunteers were fun. Basically I got to 'teach' again without having to do lesson plans, marking or meet the parents."

"I was we'll supported and there was a good crew of volunteers, the children were easy to interest and inquisitive."

"To experience life as a science teacher - if only for a short time. I might once have had a career as one. The chance to put technical matters into simple language, and the opportunities to learn from other volunteers - one worked in an optical factory."

What did you gain personally from the experience?

"I came out with a tremendous sense of having spent a worthwhile day - quite buzzing in fact."

"That I still enjoy the education process and was reminded that science is everywhere (I have 2

small children so it is good to have a reminder to keep myself on track with their school/life balance)."

"On the 3rd and 4th days I was flattered that others seemed to want to study my presentation style so I now feel that I must have something to offer!"

"It was great to have the feedback and feel that i had made a significant contribution to encourage youngsters into science."

"I am proud that I did something that was out of my comfort zone as teaching 11 to 14 year olds is quite scary."

How do you think the pupils who came to the Lab gained from the experience, or do you have any favourite memories from when you were guiding the pupils through the experiments?

"Most of them got an insight on how science can be exciting and not always difficult and boring chapters. One of the favourite memories is that of a group coming back and telling us that our experiment was the best one and thanked us for that. Very Pleasuring experience."

"I think that they really liked the hands on experience and actually stepping back to let them work was a really rewarding experience."

"All were involved even those who seemed disinterested in science at the beginning. They mostly seemed to relate to the 'real world' applications so hopefully they will look at things slightly differently now."

"The children were excited and interested by the possibility of the glass breaking and singing due to sound waves. My favourite memory is getting the potentially troublesome children involved and they actually enjoyed the experiment."

"A teenage girl had a eureka moment when i was demonstrating the light scattering experiment : she understood why sunsets were red."

"The experiments worked on a lot of levels from gifted children to those in the lower classes. it meant that pupils of all abilities were able to gain something from the experience."

Of those who responded, the main ways they heard about Lab in a Lorry were through IOP communications, the STEM Ambassador scheme or work based volunteering schemes. All of them said they enjoyed the experience and would be willing to volunteer in future and of those who were not already IOP members or STEM Ambassadors, half of them signed up to become one.

Press and Publicity

The Institute of Physics' press office informed local media in advance of all visits and numerous articles have been written for publication in local press. Below is a list of those and copies are available on request.

23 April – South Wales Evening Post
25 April – South Wales Evening Post
10 May – Wrexham Leader
16 May – The Cambrian News
22 May – South Wales Evening Post
29 May – Llanelli Star
4 June – Wrexham Leader
11 June – Wrexham Leader
26 June – Western Telegraph
3 July – Rhyl, Prestatyn and Abergele Journal

We invited local AMs to visit the Lab when we were in their constituency to see the project in action. Those who attended were:

17 May -
7 June -
14 June -
21 June -

2. Any outstanding actions resulting from the last progress meeting

All activity has happened as planned and no actions are outstanding.

3. Update on Commitment / Expenditure

See attached spreadsheet for details of the actual expenditure against estimated budget.

The total cost for the project was £29,709.57 (compared to the award of £34,000). The majority of this underspend is due to reduced haulage costs due to us losing a week of operations when a school cancelled plus lower than forecast translation costs.

The profile of spending also changed slightly from the original estimated budget:

- The actual cost for insurance and storage for the lorry for the three months of the project was paid for in advance in January, bringing that cost forward.
- The total actual cost of updating and translating materials was lower than forecast. This mainly due to us using a different translator than originally planned, meaning our overall costs for translation were much lower than expected.
- The consumables were actually purchased in April and May, rather than the first period, pushing that cost in to the final reporting period.

4. Update on Milestones / Outputs / Outcomes

The table below shows our achievement against the planned targets and milestones.

Targets		At 28/6/13
Schools	Visit 15 schools	14 schools visited
Students	Host 3,000 11-14 year olds	2933 total
Volunteers	Recruit 50 volunteers	133 recruited

Milestones

Schools identified	25 January 2013	Done
All schools booked	15 March 2013	Done
Materials translated and updated	22 March 2013	Done
Progress report to Welsh Government	29 March 2013	Done
Final report to Welsh Government	20 July 2013	Done

As mentioned above, we were only able visit 14 schools rather than 15 due to the first school dropping out at the last minute. This had an impact on the total number of pupils reached, but by maximising the time we spent in the schools we did visit, we have only just missed the target of 3,000 students.

Overall the tour has been very successful. Lab in a Lorry has been very well received by the pupils, teachers and volunteers alike. News of Lab in a Lorry has spread to schools not actively targeted during this tour, generating plenty of interest and further demand for visits.

Eighteen schools that have never been visited by Lab in a Lorry have put in a request for an event and many of the schools we have visited want us to return. This gives us plenty of scope for future events should we return to Wales.

We thank the Welsh Government and National Science Academy for their support in making this tour possible

Appendix 1 – **Copy of Evaluation Form Completed by Schools**

Lab in a Lorry Evaluation Form

Please enter details (in CAPITALS if completed by hand) and tick boxes where appropriate.

1. School Details

School Name	
Point of Contact	
Lab in a Lorry Dates	
Number of pupils involved	

2. Assessment of Event Assess the activity by ticking as appropriate:

4 (excellent) - **1** (poor)

	4	3	2	1	Comments
a. **Quality of liaison and advance planning**	☐	☐	☐	☐	
b. **Quality of presentation given by volunteers**	☐	☐	☐	☐	
c. **Adequacy of time given to pupils to practice experiment**	☐	☐	☐	☐	
e. **Quality of Lab in a Lorry facilities**	☐	☐	☐	☐	
f. **Overall perception of this event**	☐	☐	☐	☐	

3. General Comments

Please provide any general comments regarding Lab in a Lorry which may help us improve.

4. Pupil Comments

Please provide feedback from Pupils involved in Lab in a Lorry.

If the event was a return visit to your school, please complete the following:

5. Longer term impact

Please tell us the impact of the previous visit and why you wanted us to visit again? Please also see the detailed questions below and give us as much feedback as possible so that we can continually assess and improve the Lab in a Lorry experience.

How long ago was the first visit?	This was our first visit
What response was there from students during the initial visit?	e.g. - excitement/enthusiasm/boredom/jealously etc
What was the reaction of the children immediately after leaving the Lab on the day?	
Did the students discuss the Lab (and what they did) during the few weeks following the visit?	
Did you do any follow up work about the experiments/visit? If so what and when? Did you use our post visit experiment sheets?	
Do the children still remember or talk about the Lab visit now?	
Which experiments do they remember/talk about most?	
Have you seen any direct impact on the students and/or the school from the visit of Lab in a Lorry?	e.g. - have numbers choosing Physics increased? Have attitudes towards physics/science changed? Have aspirations changed? Are students more engaged with practical science?
What impact, if any, did the volunteers have on the kids?	e.g. - Did their presence give the children pointers about where science can lead in their careers/give them ideas of courses to apply for/career paths to follow?
Why did you want Lab in a Lorry to visit again?	

Many thanks for your feedback it is very valuable to know your thoughts and we hope you enjoyed Lab in a Lorry visiting you.