London Schools Excellence Fund

Self-Evaluation Toolkit

LSEFR1123

Inspiring Learning through Outdoor Science and Geography

Final report

Image 1: Teachers participating in CPD session: Tree height

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Contents

Introduction

The London Schools Excellence Fund (LSEF) is based on the hypothesis that investing in teaching, subject knowledge and subject-specific teaching methods and pedagogy will lead to improved outcomes for pupils in terms of attainment, subject participation and aspiration. The GLA is supporting London schools to continue to be the best in the country, with the best teachers and securing the best results for young Londoners. The evaluation will gather information on the impact of the Fund on teachers, students and the wider system.

The London Schools Excellence Fund (LSEF) were delivered between October 2013 and July 2015.

This report demonstrates the impact of this project on teachers, pupils and the wider school system and reflect on lessons learnt. It highlights the strengths and weaknesses of the project methodology and could be used to secure future funding to sustain the project from other sources. All final reports will feed into the programme wide meta-evaluation of the LSEF being undertaken by SQW Consulting.

Project Overview

Project Oracle: Level 2

Report Submission Deadline: 30 September 2015

Report Submission: Final Report to the GLA

Project Name: Inspiring Learning through Outdoor Science and Geography

Lead Delivery Organisation: Field Studies Council

London Schools Excellence Fund Reference: LSEFR 1123

Author of the Self-Evaluation: Helen Robertson

Total LSEF grant funding for project: £166,215

Total Lifetime cost of the project (inc. match funding): £196,563

Actual Project Start Date: October 2013

Actual Project End Date: 30 September 2015

1. Executive Summary

Inspiring Learning through Outdoor Science and Geography uses the City as a location to inspire teachers to take their lessons outside the classroom by increasing their subject knowledge and confidence in delivering outdoor learning.

75 teachers and 1,494 year 8 pupils from 30 schools across Greenwich, Lewisham, Hackney, Newham, Tower Hamlets and Waltham Forest, have participated in teacher CPD training and outdoor student learning sessions.

The project has been assessed through data collected from participating schools, questionnaires and subject knowledge tests. An external evaluation has been carried out to collect additional supporting data on confidence and assess quality of delivery.

Key findings show that:

- Teacher confidence in delivering out of classroom learning has improved and fieldwork subject knowledge has increased.
- Teachers that have participated in the project are more able to organise and lead out of classroom learning with all school pupils.
- Teachers have access to a bank of out of classroom science and geography resources.
- Pupils participating in student sessions subject knowledge significantly increased
- Participation in out of classroom sessions influences pupils in their choice of GCSE subjects, suggesting they are more likely to continue to study the subject.
- Participation in out of classroom sessions, Pupils engaged in real life, practical/first hand learning and recognised this as important in understanding the topics. They also developed life skills such as communication and confidence.

Image 2: Teachers participating in CPD session: Freshwater Invertebrates

Field Studies Council

Field Studies Council, FSC, is an environmental education charity providing informative and enjoyable opportunities for people of all ages and abilities to discover, explore, and understand the environment. FSC believes that the more we understand about and take inspiration from the world around us the more we can appreciate its needs and protect its diversity and beauty for future generations. Each year over 140,000 people experience FSC, many through our UK wide network of locations.

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- Learning outside the classroom experiences with their school, college or university.
- Professional training courses for environmental professionals and teachers.
- Natural history courses, Art courses and Family holidays.
- Identification guides and free resources.
- Funded projects both in the UK and abroad.
- Campaigns for the right to outdoor learning and fieldwork

In all we do, we are committed to:

- Delivering first hand experiences. FSC uses the environment to inspire. Taking in its sights, sounds and smells has the ability to motivate, deepen knowledge and broaden horizons.
- Providing opportunities for everyone. FSC strives to provide opportunities for everyone regardless of age, ability or background. Some of our proudest moments have arrived when trying to help those that would not otherwise benefit from an FSC experience.
- Sustainability for the future. A commitment to the environment is at the heart of everything FSC does: how we run the charity, what people learn on our courses and through our publications.
- A caring attitude. From the way we treat our customers, our staff, the environments we work in and the feel of our locations, FSC demonstrates a personal approach with great care taken in everything we do.

FSC is a Limited Company, reg. England and Wales No.412621, and a Charity No.313364 in England and SC039870 in Scotland. Registered Office: Preston Montford, Shrewsbury, Shropshire, SY4 1HW

Image 3: Pupils participating in student session: Geography Field Sketch

2. Project Description

"Inspiring Learning through Outdoor Science and Geography" uses the City as a location to inspire teachers. The project provides training and develops resources that are connected directly to the urban world that teachers' and pupils' live in and which support accessible, relevant and inspirational learning in Biology, Chemistry, Physics (Sciences) and Geography.

Throughout the project 75 science and geography teachers and 1,494 year 8 pupils from six London boroughs worked with out of classroom delivery specialists from the Field Studies Council (FSC) to use the city of London as a teaching resource.

The project were delivered in two phases. In year 1, the project was based in Greenwich Park and offered to teachers from schools in Greenwich and Lewisham. In year 2, the project was repeated, delivered in Queen Elizabeth Olympic Park and offered to schools from Hackney, Newham, Tower Hamlets, and Waltham Forest.

Inspiring Learning was delivered through a combination of teacher training sessions and student outdoor learning sessions and was aimed at key stage 3 teachers of science and geography.

Teacher training involved two professional development sessions that explored real life, outdoor examples of the Key Stage 3 curriculum to that could be used to support classroom teaching and one master classes, run by experts that develop and deepen subject knowledge. These sessions, not only provided a learning opportunity, but also developed links and networks between schools and across boroughs (School System Outcome 1). All resources produced (Teacher Outcome 3) were made available to participating teachers and made available online (section 2.2).

Teachers taking part in the project, were then able to trial their new skills. Each school, was able to take part in up to six student sessions, with teachers supported by FSC staff, putting into practice the knowledge and skills they had developed throughout the CPD sessions. This gave teachers an opportunity to demonstrate delivery of subject knowledge in outdoor environments and build confidence in delivery. These sessions were delivered at locations including at School, in local Parks and at FSC teaching sites.

For participating teachers, the project aimed to raise confidence in using the city as a teaching location (Teacher Outcome 1), improve subject knowledge in Key Stage 3 Sciences and Geography (Teacher Outcome 2), specifically out of classroom learning and build competence through improved pedagogy (using the CASE framework) and confidence in delivery (Teacher Outcome 4).

The Institute of Education report the place of fieldwork in geography and science qualifications states "…excellent fieldwork in the sciences will require enhanced initial teacher education and subsequent teacher professional development. It takes time to become a teacher who can ensure that students have an outstanding fieldwork experience" (Lambert and Reiss, 2014)

For pupils, contact time was limited to the, often short, student sessions. Through the combination of teacher training and student sessions, the project aimed to influence the choice of GCSE subjects by pupils (Pupil Outcome 1), leading to a higher uptake of separate Sciences and Geography, provide a foundation to stretch higher achievers to 8/A* (Pupil Outcome 3) GCSE attainment and Re-engage non-traditional learners (Pupil Outcome 2) at risk of borderline grades. Through this a long term goal was to improve attainment (Pupil Outcome 4). The project was targeted at year 8 pupils to ensure an opportunity to influence their GCSE choices.

For both Science and Geography, the content within the curriculum can be brought to life by using real life, outdoor examples. The House of Commons Science and technology committee stated "We conclude that both practical lessons and learning outside the classroom are essential

contributors to good quality science education". Outdoor Learning is important in increasing pupil attainment "There is no doubt that when effectively integrated into a well-planned learning programme outdoor learning experience can have a positive impact on attainment" (EOC, 2015) and on pupils "When planned and implemented well, learning outside the classroom contributed significantly to raising standards and improving pupil's personal, social and emotional development." (Ofsted, 2008)

The Inspiring Learning project was delivered by the Field Studies Council and will be externally evaluated by staff from the UCL Institute of Education.

Schools were introduced to the project through a number of channels. FSC have been working across the project boroughs, since 2010 and involved in projects in London prior to then. The project was promoted to all these project schools and FSC customers. FSC have developed strong links with Greenwich Borough, and London Legacy Development Corporation (LLDC) Go! Network, both of which were able to promote the project directly to schools.

CPD session outline:

Teachers participating in the project took part in three CPD sessions (images 1-20).

- CPD 1 – Addressing barriers to Fieldwork. Identifying the importance of Out of Classroom learning to the curriculum. Developing skills and knowledge to overcome barriers. Completing risk assessments
- CPD 2 – Subject Masterclass: Supporting teachers in developing and deepening their knowledge of the subject and local out of classroom examples. Led by experts in their field, including Institute of Physics, Field Studies Council, and Geographical Association.
- CPD 3 – Delivering fieldwork in the local area. Developing a route of enquiry including observation techniques & key questions. Using CASE (Cognitive Acceleration through Science Education) and P4C (Philosophy for Children) foundation. Showcase resources available including London Curriculum

Image 4: Teachers participating in CPD session: Solar Balloon

Image 5: Teacher participating in CPD session: Invertebrate hunting

Student Session outline:

The content of the student sessions (images 1-20) was varied to allow teachers to choose content best suited to their pupils, or current scheme of work. All sessions followed a similar structure:

- Introduction, including sharing objectives and location awareness activities.
- Investigation, including data collection and activities related to the objectives.
- Summary, bringing together the learning and drawing conclusions.

Image 6: Pupil participating in student session: biology soil depth

2.1 Transition to the new national curriculum

Inspiring Learning supports transition to the new Key Stage 3 National Curriculum for delivery from September 2014.

Out of Classroom Learning or fieldwork is identified as content within the National Curriculum. In the Geography Key Stage 3 Curriculum, students are expected to "use fieldwork in contrasting locations to collect, analyse and draw conclusions from geographical data, using multiple sources of increasingly complex information". In the Key Stage 3 Science Curriculum, pupils should work scientifically, and "use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety "

The project addresses this content, by training teachers in delivering Out of Classroom learning (fieldwork), and building confidence and competence in using Out of Classroom learning to enhance teaching across the curriculum.

2.2 Educational material produced

Resources were created and showcased during teacher training sessions, and used with the pupils on the student sessions. These free, engaging resources are designed to be easily adapted to be used near to any school. Materials produced and published online can be found here: http://fua.field-studies-council.org/teaching-resources.aspx

The project materials were added to an existing website bringing together resources from FSC projects delivered across London. The outputs form the projects have included teacher training materials, student resources and guides, and together form a more substantial set of information than any one project individually.

The project resources have been shared through http://londoned.org.uk/ and STEMNET http://www.stemnet.org.uk/ .

3. Theory of Change and Evaluation Methodology

The project Theory of Change (appendix 1) outlines how the project activities will lead to the project outcomes. A summary of the Theory of Change is below.

Activity	Assumption	Outcome TO: Teacher Outcome PO: Pupil outcome SO: School Outcome	Assumption	Long term Goal
Teacher CPD sessions	• Schools participate. • SLT continued support. • Teachers share ideas in and between schools.	• Improved teacher confidence in delivering outdoor education (TO1). • Improved teacher subject knowledge (TO2). • Develop networks between schools (SO1).	• Teachers use ideas in lessons and share ideas in and between schools.	• Improved teaching in out of classroom learning (TO4).
Online resources		• Teachers have access to better resources (TO3).	• Teachers do not face barriers in using resources. • Schools integrate resources.	
Student Sessions	• Alternative teaching styles reinforce classroom learning. • Accidental learning occurs as pupils use local places. • Raise awareness of local places.	• Stretch high achievers (PO3). • Reengage borderline learners (PO2). • Higher uptake of science / geography at GCSE (PO1).		• Improved pupil attainment (PO4).

Image 7: Teachers participating in CPD session: Wind Speed

3.1 Project outcomes

Table 1- Outcomes

Description	Original Target Outcomes	Revised Target Outcomes	Reason for change
Teacher Outcome 1	Improved teacher confidence in delivering outdoor education in the city.	n/a	
Teacher Outcome 2	Improved teacher subject knowledge in Biology, Chemistry, Physics and Geography.	n/a	
Teacher Outcome 3	Teachers have access to better outdoor learning resources.	n/a	
Teacher Outcome 4	Delivery of higher quality teaching including subject – focused and teaching methods in Science and Geography	n/a	
Pupil outcome 1	Higher uptake of Sciences and Geography at GCSE	n/a	
Pupil outcome 2	Reengage learners at risk of borderline C/D grades	n/a	
Pupil outcome 3	Stretch high achievers to level 8/A*	n/a	
Pupil outcome 4	Improved attainment in Biology, Chemistry, Physics and Geography for Year 8 and beyond.	n/a	
Pupil outcome 5	-	Increased Pupil Subject Knowledge for pupils attending student sessions.	Additional data collection
Pupil outcome 6	-	Pupils attending student session identify reasons for outdoor learning.	Additional data collection
Pupil outcome 7	-	Pupils have positive feelings about being outside	Additional data collection
Pupil outcome 8	-	Pupils have a preference for learning outside.	Additional data collection
School system outcome 1	Teachers involved in intervention make greater use of networks, other schools and colleagues to improve subject knowledge and teaching practice.	n/a	

3.2 Changes to project activities after Theory of Change validation

There were **no changes made** to the Theory of Change after it was validated. Additional pupil outcomes (5,6,7,8) were identified during data collection and analysis and have been included in the project impact data (Section 8). These have made no direct changes to the Theory of Change, but are useful additional outcomes.

3.3 Changes to curriculum subjects, focus or key stage

There was **no change made** to the focus, subjects or key stage of the project.

3.4 Changes to validated evaluation plan

The Evaluation framework (Appendix 2) outlines the outcomes, indicators and data collection that the project expected to collect. There were **no changes made** to the evaluation plan, though not all the expected data was collected (Section 4). Sample sizes were in line with in the evaluation framework. The changes to collected data were:

- Due to limited time, Interviews for TO1, were completed by email, and written responses rather than face to face interviews or focus groups.
- A small scale audit of resources was carried out in year 1. Limited data was collected from teachers about the use of these resources post project.
- Pre intervention observations for TO4 were not completed due to the timing of the project start. Teachers were not willing to being observed until they had completed the CPD sessions, so comparison was not achieved.
- Comparison Groups were not used as they were not able to be identified in the project timeframe.
- Some data was collected for PO2 and PO3, however only short term data could be collected. Data for trends was not collected and longer term impacts are difficult to evaluate in the project timescale.
- Data for teacher engagement in networks (SO1) was not collected.

Additional data was collected during the student sessions creating PO5, PO6, PO7, PO8. This data was collected as it was straight forward to collect, and allowed the project to further explore the pupils interaction with out of classroom learning. This data is analysed in Section 8. This data has not impacted upon the intended evaluation, but has added additional commentary.

Image 8: Pupil participating in student session: geography, Global Development

4. Evaluation Methodological Limitations

The evaluation framework was fully developed and validated after the application for funding was successful. The original scope of the project was to evaluate the teacher confidence in using the outdoor environment. As part of the Theory of Change validation, the evaluation framework and theory of change was expanded to include impact on pupils. Pupils were engaged with the project between 1-4 hours, and whilst short term impacts on them can be identified, longer term impacts are difficult to evaluate in this timescale.

4.1 Methodological limitations of the evaluation

The methodological limitations below relates to the validated Evaluation Framework (appendix 2) and is broken down by the type of data collection method used. The evaluation data and commentary can be found in section 8.

There are some overall limitations to the evaluation data that can be identified:

- The data is limited as there is no **comparison group**. This would have allowed us to evaluate the impact of the project on the intervention group with another.
- The project **timeframe** is short making it difficult to measure the impact on pupils and teachers over a period of time. Whilst the short term impacts are a useful indicator, a more in depth study would look at longer term impacts of the project.
- The project is one element of teacher CPD which can vary by department, school or length of service. The impacts identified may not just be **attributed** to the project, as we were unable to isolate it from other factors.
- Subject teachers, pupils, schools and boroughs are combined into one cohort, as the **sample size** is not large enough for each subject group to be evaluated independently. Combining the sub groups doesn't take into account the experience of the teachers, and therefore their starting knowledge or that it is likely that Geography and Biology teachers have more out of classroom learning experience than Chemistry or Physics due to the nature of their subjects. With a larger sample and more time, this data may be investigated at borough, school level, or subject.
- Some **follow up** was undertaken with teachers from year 1 at the end of year 2. This has given us an opportunity to look at the impact of the project one year on. With more resources, this could have been done in more depth and could be repeated over additional timescales.
- Further **in depth analysis** could be done of the data gathered from pupils, along with a **long term study** if resources and time were available.
- The type of **questions** asked for the data collection could have been more focussed wither on the specific subject or using closed questions / multiple choice. Some questions have not provided the expected answers, especially using open questions, this has led to some additional evaluation.

Teacher Outcomes

- **Teacher data** on length of service, school level, and churn was straight forward to collect and monitor. A registration form was used to ensure all participating teachers provided this data on sign up and a spreadsheet used to monitor the information throughout the programme.
- **Teacher subject knowledge and confidence** was collected pre and post intervention. The methods that were used, the efficacy scale (appendix 7), fieldwork sand subject specific knowledge questionnaire, were quick and simple to complete. An online system was trialled, but it was found that completing these face to face, as part of the teacher training session, was the most effective, as teachers were present and willing to complete data about themselves and ensured maximum response. There is incomplete data from school teachers due to missing the CPD sessions, churn, and other issues such as interviews, illness and attending field trips. This has resulted in an incomplete data set from some teachers. The post intervention results were completed with no reference to the pre intervention data. Whilst this provides an honest set of data, it is likely that given their pre intervention results, teachers would have been more considered in their response and given different results.
- **Interviews** were to take place to expand on findings for teacher confidence. With the project finishing in July, finding a date for teachers to take part in an interview / focus group was difficult, instead, the most successful option, was to email out a questionnaire (appendix 8) to participating teachers, asking them to complete and return it. This method is biased, i.e. only the best, most confident, with more time or with a specific issue or point to make will respond.
- **Audit of resources** was planned, but not undertaken. At the start of year 1 and 2, a sample of resources was collected from teachers with the intention of comparing them to new resources produced for the project. The resources submitted were limited in scope as teachers were attending the CPD sessions for inspiration. There are audit guidelines available that could have been used for this. Teachers were asked further questions as part of the interview to obtain additional data for this.
- **Observations** of 10% of the teachers was planned both pre and post intervention. A number of factors influenced the success of this strategy: the delayed start date of the project, the project timescale and the time of year (less fieldwork taking place in Autumn / Spring therefore less opportunity to observe teachers pre intervention). Teachers were not keen to participate in observations before any CPD, so pre intervention observations were not completed. Post intervention observations were undertaken using a protocol (appendix 9) developed by the external evaluator. The observations that were undertaken were based on staff availability, as a result they are sampled randomly, though using a system e.g. da draw would have been more rigorous.

Pupil Outcomes

- **Pupil data** e.g. LAC, FSM has been difficult to collect. In year one, there was an issue in collecting pupil data from schools. This was addressed in year, by requesting a member of SLT sign the registration form although this had a limited impact upon the year 2 teachers providing data. A variety of reasons has been identified: time to access data, permission to submit data to the project from SLT being withheld, teachers disengaging from the project, teachers being able to access the data required and non-response from some teachers has resulted in some data not being collected from certain schools.

- **Trend Data** was requested alongside the pupil data and subject to the same issues. This data is highly influenced by external factors such as the increasing popularity of geography as a subject and the inclusion of geography in the EBacc. The project intended to influence pupils taking individual sciences, however this is dependent upon the school and not the individual.
- **GCSE choices** was identified as an indicator as the groups were expected not to be choosing GCSEs until after the intervention. Students were asked pre and post student session on their choices / likely choices. The data was relatively easy to collect, however many students had already chosen their GCSEs pre visit. The project aimed to encourage the take up of separate sciences, however whether this option was available was made at school level and many participating schools do not offer separate sciences at GCSE. The timing of the intervention should be noted for future projects.
- **Pupil Attainment** has been collected, subject to the pupil data issues above. This data, whilst useful, does not account for any external influences that may have impacted upon the pupils levels. It is difficult to identify whether this attainment change is related to the project or not. The use of comparison groups would have given more useful data, as the difference between the two groups could have been calculated. The collected data is not detailed enough to break down the project subject knowledge into pupil sub groups. Due to the timing of the project and the original proposal a comparison group has not been used. It is recognised that in future using a comparison group would add strength to the data set.
- **Pupil subject knowledge** pre and post the student session. Data collection from student outdoor sessions was easy to capture as the questionnaire used for collecting data from the pupils was used as part of the lesson introduction and to engage the pupils with the objectives of the lesson which is an Ofsted criterion. In addition data on their thoughts and attitudes towards being and learning outside was collected. It has been identified, that the open questions used for this questionnaire have given a wide ranging set of answers. In order to evaluate these, we have had to categorise the answers, whilst this has been done to the best of our ability, it may not always be representative of what the student meant / was trying to say. The open question has been useful, but in future projects a closed question directly related to the intended outcomes would be used alongside this in order to evaluate the project more successfully.

School System Outcomes

- It was expected that data would be collected on increased use of **networks** and online resources. Opportunities were signposted to teachers, but no data was collected to support this outsome.

External evaluation

- **External Evaluation.** An external evaluation is being carried out by a PGCE coordinator from the Institute of Education. Their expertise in research and outdoor learning, will enable them to assess the project impact on teachers in both their subject knowledge and confidence in delivery. The focus of the external evaluation has been on the interviews and observations of both teachers and students.

4.2 Continuation of Project post funding

Following an extension to the project, further CPD sessions will be offered to schools in the Autumn of 2015. These will target the project schools, encouraging them to continue to develop networks and use the project resources. These sessions will also support the dissemination of the project.

Resources developed from these sessions will be included on the project resources website, continuing to build this developing resource bank. This will continue to grow as and when further funding is successful.

A programme of CPD sessions, based on the project CPD sessions and the FSC core programmes will be offered by FSC and in partnership with other organisations. Unless funding is available, a charge is made for these sessions paid by schools / participants.

2015/16 is the #yearoffieldwork, www.fieldwork.org.uk/ As part of this, FSC is offering teacher training sessions and as part of this will promote the resources produced for the project and promote opportunities to schools. As teachers leave and new teachers start, there will be an ongoing need for training such as that provided by this project.

FSC offers student out of classroom learning sessions as part of a paid for offer. FSC has been delivering out of classroom learning in geography and science for over 70 years. Projects offer an opportunity to engage with schools that may not be able to afford this opportunity without subsidy. FSC offer a bursary fund to support to individuals who are from disadvantaged backgrounds enabling them to take part in FSC curriculum focussed courses with their school class. Additional funding enables this opportunity to extend to more individuals and groups. As school budgets are stretched, there is an increasing need to support out of classroom learning.

The theory of change and evaluation methodology along with the identified limitations will be useful in developing and delivering future projects, ensuring a more thorough evaluation is carried out.

Image 9: Pupils participating in student session: geography, Environmental Quality Survey

Image 10: Teachers participating in CPD session: Weather

5. Project Costs and Funding

5.1 income and Expenditure:

Table 2 - Project Income

	Original Budget	Additional Funding	Revised Budget [Original + any Additional Funding]	Actual Spend	Variance [Revised budget – Actual]
Total LSEF Funding	166,215	0	166,215	122,929	42,797
Other Public Funding	0	0	0	0	0
Other Private Funding	0	0	0	0	0
In-kind support (schools) [1]	19,200	0	19,200	7,450	11,750
In-kind support (FSC) [2]	11,148	0	11,148	11,148	0
Total Project Funding	**196,563**	**0**	**196,563**	**141,527**	**54,547**

In kind support:

[1] In kind support from schools, is indicative of the costs associated with teachers being out of schools. It is calculated as £50 per day. This was originally calculated as 128 teachers participating in three CPD sessions (384 days). Due to recruitment of teachers to the project and teacher churn, the total number of teacher CPD days delivered was 149 days.

[2] In Kind support from FSC includes, some office overheads, ICT equipment and support, central finance team and strategic management costs and Health and Safety training and other training for project staff.

Expenditure:

Table 3 shows a breakdown of the expenditure. At the end of year 1, the budget was altered slightly and approved by the GLA. This adjustment is shown in the revised budget column.

The Project has underspent. This consists of two elements, the in kind support from schools and some LSEF funding. The in kind support from schools, was indicative of costs and is shown in variance column in table 3. The LSEF funding variance is shown in the final column in table 3.

The Project has been granted an extension to use the project underspend. In the autumn of 2015 further CPD sessions will be delivered to London schools, extending the geographic reach of the project around key Learning Locations at Greenwich Park, Bushy Park, The Regent's Park and Queen Elizabeth Olympic Park. These CPD sessions will be supported by student sessions delivered in partnership with FSC and school staff to develop teacher confidence and competence in learning outside the classroom.

Table 3 - Project Expenditure

	Original Budget [incl. in kind support]	Additional Funding	Revised Budget [Original + any Additional Funding]	Actual Spend	Variance [Revised budget – Actual] [incl. in kind support]	LSEF funding variance
Direct Staff Costs (salaries/on costs)	72,000	0	72,000	64,972	7,028	7,028
Direct delivery costs	0	0	0	0	0	0
Training Costs	17,827	0	17,827	16,763	575	575
Management and Admin Costs	17,912	0	17,912	18,042	-130	-130
Participant Costs	0	0	0	0	0	0
Publicity and Marketing Costs	4,524	0	6,024	2,500	3,524	3,524
Teacher Supply / Cover Costs	76,800	0	72,300	31,750	40,550	28,800
Other Participant Costs	0	0	0	0	0	0
Evaluation Costs	7,500	0	10,500	7,500	3,000	3,000
Others as Required	0	0	0	0	0	0
Total Costs	**196,563**	**0**	**196,563**	**141,527**	**54,547**	**42,797**

5.2 Project Expenditure

There have been no major changes to the budget profile. A minor revision was undertaken at the end of year one, to allow more schools to participate in year 2.

The funding for this project had a significant proportion to cover teacher supply costs (39%), including both LSEF funding and in kind support. The project was designed to cover teacher costs, based on information provided by the GLA, from schools that indicated costs were a significant barrier for them. Due to a smaller number of registered teachers and therefore delivered student sessions, this is the main an area of underspend (table 3: LSEF funding variance).

6. Project Outputs

Inspiring Learning aimed to work with 32 schools, giving an opportunity to four teachers from each (128 teachers in total). This approach was taken to provide the maximum opportunity to embed Out of Classroom learning into the school, and not rely on one teacher who when they left would take this knowledge with them.

Following the CPD sessions, teachers were able to bring up to 6 classes of pupils on a student session, assuming 32 schools, this would have been a total of 192 sessions and approximately 5,760 pupils (at 30 pupils per class). Table 4 outlines the original, revised and actual targets.

The offer to work with six classes, meant most participating schools had the opportunity to bring every year 8 pupil at least once.

Table 4 – Outputs – counted once during the project

Description	Original Target Outputs	Revised Target Outputs [Original + any Additional Funding/GLA agreed reduction]	Actual Outputs	Variance [Revised Target - Actual]
No. of schools	32	37	30	-7
No. of teachers	128	128	75	-53
No. of additional teachers	-	-	86	86
No. CPD sessions	24	24	28	4
No. of Student sessions	192	192	113	-79
No. of pupils	5,760	5,760	1,494	-4,266

The number of participating schools is slightly down on target. Information about the project was distributed to schools via existing networks, FSC customers, generic email, post and by phone. It was expected in year 2 that there would be more interest, given a longer lead in time for recruitment and by working across more boroughs. This led to an increased revised target.

The project intended to work with four teachers from each school. It became apparent during recruitment that this was not going to be easy to achieve. In most cases, teacher recruited to the project did so individually, or by department (science or geography), not by school, and CPD seemed to be delegated by SLT to teachers rather than being built into a structured programme.

The project did work with 86 additional teachers, not signed up to participate, but that took part in the student sessions. These teachers did not participate in the CPD sessions, but would have gained some experience and skills by taking part in the student sessions.

Schools were offered the opportunity to bring up to 6 classes of pupils to take part in an out of classroom session. These were offered as short sessions to fit a lesson, or longer trips (Appendix 4). Designed to enhance the CPD sessions, the schools were expected to take this opportunity of a free science / geography trip. Nine schools did not choose to bring a class out of school (54 of the sessions). Of those that did bring groups, they often chose to combine subjects into one session. If schools had not done this, the total pupils reached would have been 2,331. Other schools were very small and were unable to bring more than one class.

The mean pupil attendance on a session was 23 pupils. This is significantly smaller than the anticipated 30 pupils per class, but in line with average class sizes (DfE, 2011) suggesting the original target should have been smaller.

In addition to these pupils, other pupils being taught by the teachers participating in the project would have indirectly benefitted as the teachers implemented their training across classes and year groups. The number of pupils impacted upon has not been measured.

7. Key Beneficiary Data

The following sections focus on the key beneficiary data for teachers and pupils directly benefitting from the project. Full details can be found in appendix 3. The data is provided at project level, aggregated by borough and aggregated by year of project. Schools and teachers have been given unique identifiers using the format *'project_year.school.teacher#'*, and these are referred to throughout the report. Pupils were given identifiers in the format *'project_year.school.Ppupil#'.* The schools from each borough were:

- Greenwich: *1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 1.08, 1.09*
- Lewisham: *1.07, 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16*
- Hackney: *2.04, 2.05, 2.12*
- Newham: *2.08, 2.13*
- Tower Hamlets: *2.06, 2.07, 2.10, 2.14*
- Waltham Forest: *2.01, 2.02, 2.03, 2.09, 2.11*

Image 11: Pupils participating in student session: chemistry, air quality using lichens

7.1 Teacher Sub-Groups

The table below (Table 5) outlines details about the participating teachers, their training and length of service. The project focussed on secondary schools, explaining why there is no primary school data. Of the 73 teachers that engaged with the project, 36% of the teachers disengaged from the project (appendix 3).

Table 5 – Teachers directly benefitting, from the programme (counted once during the project)

Borough *Participating Schools*	No. participating teachers	% NQTs (in their 1st year of teaching when they became involved)	% Teaching 2 – 3 yrs (in their 2nd and 3rd years of teaching when they became involved)	% Teaching 4 yrs + (teaching over 4 years when they became involved)	% Primary (KS1 & 2)	% Secondary (KS3 - 5)
Greenwich	20	35%	30%	35%	n/a	100%
Lewisham	25	32%	28%	40%	n/a	100%
Year 1	**45**	**33%**	**29%**	**38%**	**n/a**	**100%**
Hackney	6	17%	50%	33%	n/a	100%
Newham	3	0%	33%	67%	n/a	100%
Tower Hamlets	8	0%	50%	50%	n/a	100%
Waltham Forest	13	8%	69%	23%	n/a	100%
Year 2	**30**	**7%**	**56%**	**37%**	**n/a**	**100%**
Project Total	**75**	**23%**	**40%**	**37%**	**n/a**	**100%**

7.1.2 Teacher sub-groups

Data can be found about the school workforce www.gov.uk/government/statistics/school-workforce-in-england-november-2014. This information is not provided at a level which can be compared to the project data.

The project was delivered to a mix of teachers with varying length of service and experience. This would have had a minimum impact on results, with longer serving teachers expected to have more experience in delivering out of classroom learning. Alongside this it is expected that geography and biology teachers would have more experience in out of classroom learning as it should have formed part of their own schooling and training. These impacts would be measureable if there was a larger teacher sample for each project subject.

7.2 Pupil Sub-Groups

Tables 6,7 and 8 provide data on the pupils directly benefitting from the project i.e. took part in the student sessions.

Tables 6 – Pupil Sub-Groups benefitting from the programme i.e. participating in the project

	No. pupils	% LAC	% FSM	% FSM last 6 yrs	% EAL	% SEN
Greenwich	561	0.4	12.1	11.4	9.8	10.5
Lewisham	349	1.4	21.5	14.6	14.3	17.5
Year 1	**910**	**1.3**	**27.1**	**21.8**	**19.9**	**22.8**
Hackney	143	0.0	26.6	-	46.9	14.0
Newham	20	0.0	20.0	-	95.0	15.0
Tower Hamlets	135	0.0	10.4	-	0.7	3.7
Waltham Forest	286	0.3	14.3	-	52.1	22.0
Year 2	**584**	**0.3**	**26.3**	**-**	**64.0**	**24.7**
Project Total	**1494**	**0.9**	**26.8**	**12.8**	**38.1**	**23.5**

Tables 7 – Pupil Sub-Groups benefitting from the programme i.e. participating in the project

	No. Male pupils	No. Female pupils	% Lower attaining	% Middle attaining	% Higher attaining
Greenwich	134	137	2.1	10.5	12.3
Lewisham	72	185	3.2	23.5	38.7
Year 1	**206**	**322**	**4.4**	**26.8**	**38.7**
Hackney	103	14	16.1	54.5	10.5
Newham	19	0	10.0	70.0	15.0
Tower Hamlets	0	23	1.5	15.6	0.0
Waltham Forest	108	95	11.5	52.1	9.4
Year 2	**230**	**132**	**16.3**	**71.0**	**12.2**
Project Total	**436**	**454**	**9.3**	**45.0**	**27.8**

Table 8 – Pupil Sub-Groups benefitting from the programme i.e. participating in the project

	% Asian Indian	% Asian Pakistani	% Asian Bangladeshi	% Asian Any Other background	% Black Caribbean	% Black African	% Black Any Other Background	% Mixed White & Black Caribbean	% Mixed White & Black African	% Mixed White & Asian	% Mixed Any Other Background	% Chinese	% Any other ethnic group	% White British	% White Irish	% White Traveller of Irish heritage	% White Gypsy/Roma	% White Any Other Background	Refused / Not obtained
Greenwich	0.5	0.7	0.5	2.8	1.4	11.5	2.3	1.1	1.2	0.4	1.9	0.5	0.7	14.5	0.2	0.0	0.0	3.4	56.4
Lewisham	0.8	0.5	0.5	2.7	14.4	5.1	1.1	2.1	0.3	2.4	4.0	1.3	0.5	17.9	0.8	0.0	0.0	7.2	38.4
Year 1	**0.6**	**0.6**	**0.5**	**2.8**	**6.6**	**8.9**	**1.8**	**1.5**	**0.8**	**1.2**	**2.8**	**0.8**	**0.6**	**15.8**	**0.4**	**0.0**	**0.0**	**4.9**	**49.3**
Hackney	2.1	0.7	0.0	2.1	7.5	26.0	1.4	0.7	1.4	0.0	1.4	1.4	2.7	4.1	1.4	0.0	0.0	10.3	37.0
Newham	10.0	5.0	0.0	10.0	5.0	5.0	15.0	0.0	0.0	5.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	5.0	10.0
Tower Hamlets	0.0	0.0	16.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.7
Waltham Forest	1.0	8.7	1.4	5.6	5.6	10.4	4.2	1.0	1.0	1.0	2.4	0.0	3.8	6.9	0.0	0.0	0.0	18.1	28.8
Year 2	**1.4**	**4.6**	**4.4**	**3.6**	**4.8**	**11.7**	**2.9**	**0.7**	**0.8**	**0.7**	**1.5**	**0.3**	**3.6**	**4.4**	**0.3**	**0.0**	**0.0**	**11.5**	**42.8**
Project Total	**0.9**	**2.2**	**2.0**	**3.1**	**5.9**	**10.0**	**2.2**	**1.2**	**0.8**	**1.0**	**2.3**	**0.7**	**1.8**	**11.4**	**0.4**	**0.0**	**0.0**	**7.4**	**46.8**

7.2.1 Pupil sub groups

Figure 1 shows data by borough and London (Data source http://data.london.gov.uk/ accessed 17/09/15).

Compared to London, the project participants are representative of the school population. The project %LAC is 0.2% higher than London, influenced by Lewisham participants with 1.4% LAC. The project %FSCM is 8.3% higher than the London %FSM but in most project boroughs was below the %FSM for that borough. The project %EAL was3% lower than the London %EAL. In the data Tower Hamlets is represented by one school with a low %EAL which is not representative of the borough. Except Tower Hamlets, all boroughs had a significantly higher %SEN participants than the borough average.

Figure 1 – Pupil data by project borough and London

	% [1] LAC (2014 SSDA903 returns & 2014 DCSF school census)	% FSM (2015 DCSF school census)	% EAL (2015 DCSF school census - secondary)	% SEN (2014 DCSF school census)
Greenwich	1.2	20.3	34	2.9
Lewisham	1.2	22.7	27	2.7
Hackney	0.8	32.1	45	3.2
Newham	0.7	16.3	66	0.8
Tower Hamlets	0.7	35.5	72	3.6
Waltham Forest	0.6	16.7	47	3.1
London	0.7	18.5	41	2.7

[1] The % LAC has been calculated using the numbers provided in the 2014 SSDA903 returns and the total number of pupils provided in the 2014 DCSF school census.

Image 12: Pupils participating in student session: biology, species diversity

8. Project Impact

8.1 Teacher Outcomes

Table 9 – Teacher Outcomes: teachers benefitting from the project

Target Teacher Outcome	Research method/ data collection	Sample characteristics	Metric used	1st Return and date of collection	2nd Return and date of collection
TO1: Teacher confidence	Pre & Post intervention Self Efficacy Survey	68% (41) teachers	Confidence scale 1-9	Jan 2014 (year 1), Oct 2014 or Jan 2015 (year 2)	April 2014 (year 1) April 2015 (year 2)
TO1: Teacher confidence	Interviews (by email)	13% (8) teachers	Qualitative data	-	July 2015
TO2: Subject knowledge	Pre & Post intervention Fieldwork Knowledge Questionnaires	55% (33) teachers	Correct answers x/10	Jan 2014 (year 1), Oct 2014 or Jan 2015 (year 2)	April 2014 (year 1) April 2015 (year 2)
TO2: Subject knowledge	Pre & Post intervention Fieldwork Knowledge Confidence Rating	55% (33) teachers	Confidence scale 1-4	Jan 2014 (year 1), Oct 2014 or Jan 2015 (year 2)	April 2014 (year 1) April 2015 (year 2)
TO2: Subject knowledge	Pre & Post intervention Specific Subject Knowledge Questionnaires	37% (22) teachers	Correct answers x/10	Jan 2014 (year 1), Oct 2014 or Jan 2015 (year 2)	April 2014 (year 1) April 2015 (year 2)
TO2: Subject knowledge	Pre & Post intervention Specific Subject Confidence Rating	37% (22) teachers	Confidence scale 1-4	Jan 2014 (year 1), Oct 2014 or Jan 2015 (year 2)	April 2014 (year 1) April 2015 (year 2)
TO3: Improved resources	Audit Sample / Scrutiny of resources pre/post intervention	13% (8) teachers	Qualitative data	-	July 2015
TO4: Higher quality teaching	Observations	12% (7) teachers	Qualitative data	-	Throughout project

Table 10 – Comparison data outcomes for Teachers

Target Outcome	Research method/ data collection	Sample characteristics	Metric used	1st Return and date of collection	2nd Return and date of collection
A comparison Group was not used					

8.1.1 Commentary on Teacher Outcomes

The following teacher outcomes have been evaluated at both project level and subject specific (Biology, Chemistry, Physics and Geography) level. Figure 2 shows the number of teachers that responded for each subject.

Teacher outcomes are evaluated using a range of data (table 9). 60 teachers (80%) of the 75 teachers engaged in the project completed one of or more of the evaluation elements.

Figure 2 – Number of teachers completing pre and post surveys & questionnaires

	Total recruited teachers	Total engaged teachers	Self efficacy	Fieldwork Subject Knowledge & confidence	Subject Knowledge & confidence
Biology	18	15	11	9	7
Chemistry	13	10	8	5	3
Physics	11	6	3	1	3
Geography	33	29	19	18	9
Overall teacher numbers	**75**	**60**	**41**	**33**	**22**
% teachers completing data		**100%**	**68%**	**55%**	**37%**

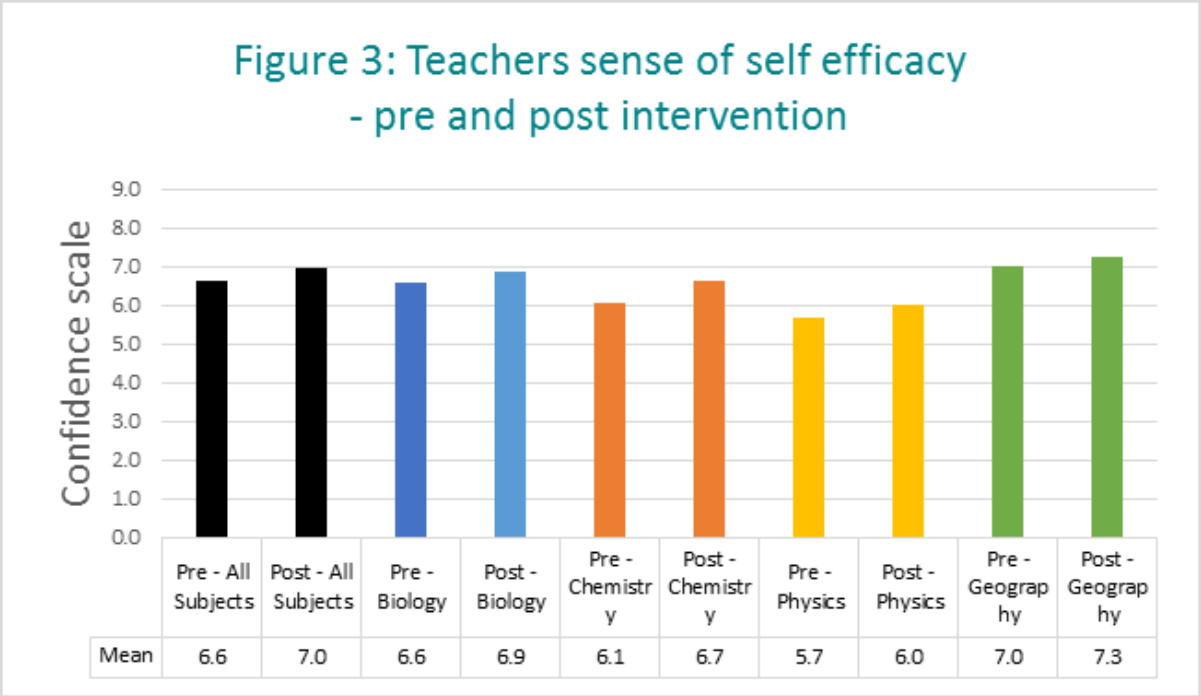
The % teachers (table 9) is based on the 60 teachers that provided some, if not all information. Responses that were damaged, unreadable, filled in incorrectly or where a teacher disengaged from the project mid delivery and there is no post intervention data account for the % reduction.

The same CPD sessions were delivered in year 1 and year 2, though the content varied for each subject. The teachers have been combined into one data set for evaluation. Dividing the teachers by year or by subject would have made the sample size too small for evaluation purposes.

TO1: Teacher Confidence

Teachers were assessed on their sense of self efficacy using a survey. 41 (85.4%) teachers completed the survey, pre and post intervention.

Overall, teacher sense of self efficacy improved over the lifetime of the project (figure 3), from a mean score of 6.6/9 to a mean score of 7.0/9 (d=0.37). This impact is positive but not statistically significant t(80) = 1.64 p=1.99. This result is likely to be influenced by the project CPD sessions but may also be due to the personal development of the teacher as a professional.



Interviews with teachers were conducted by email and analysed by the external evaluator who concluded *"All the teachers were very positive about the impacts of the project on their confidence and competence in leading outdoor learning after their training sessions. Seven out of the eight responding teachers reported leading new outdoor learning opportunities for their students as a result of taking part in the Inspiring Learning project. These included working in both the school grounds and in outdoor venues further afield in London and beyond." Examples from teachers of this increased confidence:*

- *I now have more ideas for activities that I can run in an outdoor setting and have seen firsthand how positively the students respond to them. This has increased my confidence in planning and running the activities and increased my confidence in the relevance of these activities to the students' progress in scientific understanding. (1.03.01)*
- *I felt a measurable impact on leading more physical and meaningful excursions following the FSC course, especially in light of the KS3 curriculum changes (1.01.03)*
- *I am a lot more confident in leading outdoor education sessions, whether on school grounds or out-of-school venues. The project has provided me with some good ideas to use our local environment to encourage students to engage with chemistry.(1.04.01)*

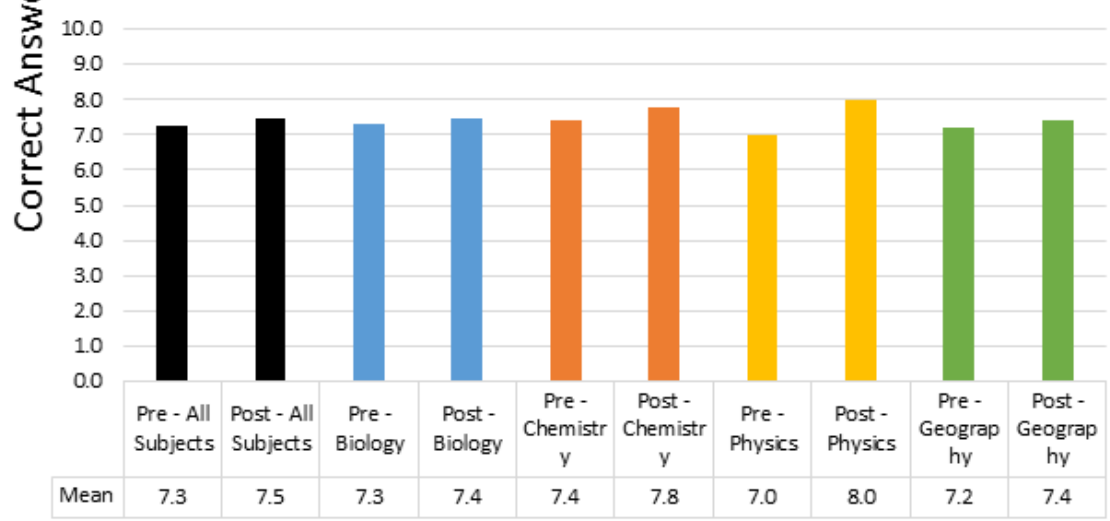
Following the pupil session, year 2 teachers were asked if they would be confident to lead the session themselves. Reponses were collected from 41% of year 2 teachers, All of whom said they would be happy to lead the session themselves, and subject to the purchase of additional equipment would be likely to run the session.

TO2: Fieldwork and Subject Knowledge

Fieldwork questions were split into two sections, the first 7 questions were the same for all subject, the final 3 questions were about fieldwork techniques for the teachers specific subject. They are combined into one set of results.

Overall, the average number of questions correctly answered increased (figure 4) from a mean score of 7.3/10 to a mean score of 7.5/10 (d=0.16). This impact is positive but not statistically significant t(64) = 0.74 p=1.99.

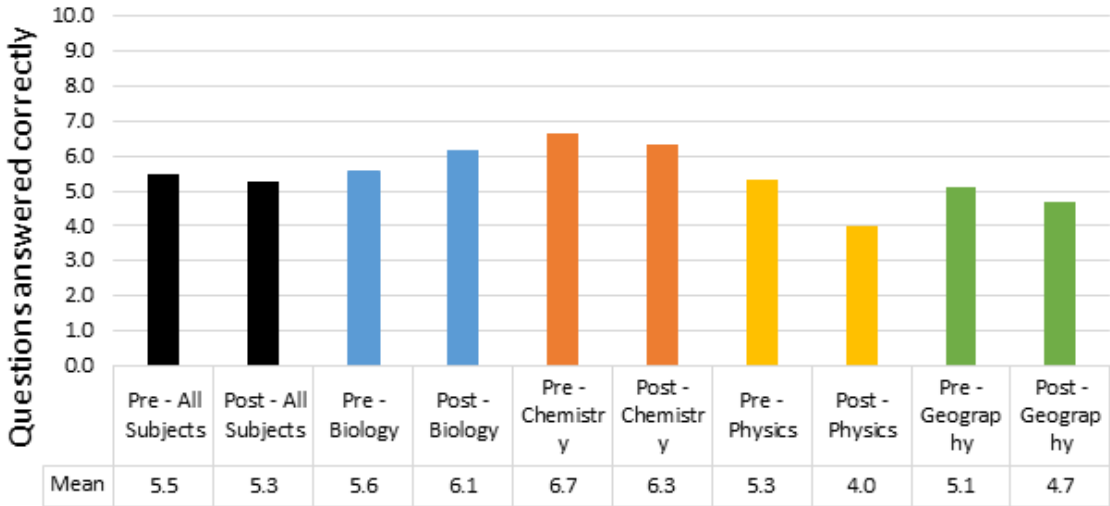
Figure 4: Fieldwork Knowledge - pre and post intervention



	Pre - All Subjects	Post - All Subjects	Pre - Biology	Post - Biology	Pre - Chemistry	Post - Chemistry	Pre - Physics	Post - Physics	Pre - Geography	Post - Geography
Mean	7.3	7.5	7.3	7.4	7.4	7.8	7.0	8.0	7.2	7.4

The ten subject knowledge questions were based on the teachers subject specialism. Overall the subject knowledge decreased from a mean score of 5.5/10 to a mean score of 5.3/10 (d=-0.12), with only Biology teachers improving their subject knowledge. This impact is not statistically significant t(42) = 0.39 p=2.02.

Figure 5: Subject Knowledge - pre and post intervention



	Pre - All Subjects	Post - All Subjects	Pre - Biology	Post - Biology	Pre - Chemistry	Post - Chemistry	Pre - Physics	Post - Physics	Pre - Geography	Post - Geography
Mean	5.5	5.3	5.6	6.1	6.7	6.3	5.3	4.0	5.1	4.7

For both fieldwork subject knowledge and subject knowledge teachers were asked to rate their confidence in their answer on a scale of 1-4. This allows us to investigate the relationship between

teachers and their own knowledge. Figures 5 and 6 show the mean percentage of teachers answering the ten question correctly and how they scored their confidence.

Figure 6: Fieldwork Knowledge

Confidence Pre Intervention	Correct %	Incorrect %
Confident (score 3/4)	**43.6**	9.1
Unconfident (score 1/2)	29.1	18.2

Confidence Post Intervention	Correct %	Incorrect %
Confident (score 3/4)	**60.6**	13.3
Unconfident (score 1/2)	13.9	12.1

Figure 7: Subject Knowledge

Confidence Pre Intervention	Correct %	Incorrect %
Confident (score 3/4)	**33.2**	10.0
Unconfident (score 1/2)	22.3	34.5

Confidence Post Intervention	Correct %	Incorrect %
Confident (score 3/4)	**45.0**	21.8
Unconfident (score 1/2)	7.7	25.5

For both fieldwork knowledge and subject knowledge the percentage of teachers answering the question correctly and with confidence increased from 43% to 60% and from 33% to 45%.

TO3: Improved Resources

As part of the emailed interview, teachers were asked to comment on resources they had used or produced as a result of the project. The external evaluator concluded: *All participating teachers reported creating new, or using and adapting FSC-created field work resources as a result of the Inspiring Learning project. These included:*

- *"Oh deer", Bubbles, rockets with iPad analysis, lichen survey, global warming in a bottle;*
- *Soundscapes, the throwing the ball activity to develop questioning, rock sampling – rub test, tourism visitor questionnaire, park facilities survey, shopping survey, bi polar charts for environmental quality, increased use of GIS – locating data, pinning, measuring looking at historic coastal change, polygons;*
- *creating rivers booklet for the drop down days.*

TO4: Higher Quality Teaching

A sample of teachers that organised year 8 outdoor learning sessions were observed by an external evaluator and FSC staff using an evaluation protocol. The external evaluator summarised the observations:

Eight school teachers and nine supporting teachers were observed during the sample outdoor learning sessions. Three of the observed teaching sessions were entirely led by the lead teacher and five were led by the FSC tutor, with the school teacher in a supporting role.

School teachers demonstrated confidence and competence in leading a range of learning activities at the sites of interest. Effective team-teaching occurred between FSC tutors and school teachers where this was observed. Teachers adopted activities demonstrated by FSC tutors during the CPD sessions and were knowledgeable and enthusiastic 'experts' in the field. They used the outdoor venues as opportunities to enrich the geography or science curriculum, to apply skills learnt in school in new contexts and to encourage students to think and act as geographers, scientists and 'explorers'.

Image 13: Teacher participating in CPD session: chemistry, soil pH

Image 14: Teacher participating in CPD session: chemistry, Carbon Dioxide

8.2 Pupil Outcomes

In addition the four outcome identified in the Theory of Change and Evaluation Framework, data was collected from pupils on their pre and post intervention subject knowledge (Pupil Outcome 5), where they thought they would learn more about the subject (Pupil Outcome 6), their feelings about being outside (Pupil Outcome 7) and if they would like more lessons outside in the future (Pupil Outcome 8).

Table 11 – Pupil Outcomes for pupils benefitting from the project

Target Pupil Outcome	Research method/ data collection	Sample characteristics	Metric used	1st Return and date of collection	2nd Return and date of collection
PO1: Science/ Geography GCSE uptake	Pre & Post intervention Questionnaire	80% of pupils participating in student sessions	Yes/No	Start of student session	End of student session
PO2: re-engage learners	Pupil attainment data	55% of pupils participating in student sessions	Student levels	End of pupil year 7	End of pupil year 8
PO3: Stretch Higher achievers	Pupil attainment data	55% of pupils participating in student sessions	Student levels	End of pupil year 7	End of pupil year 8
PO4: increased attainment	Pupil attainment data	55% of pupils participating in student sessions	Student levels	End of pupil year 7	End of pupil year 8
PO5: Pupil Subject Knowledge	Pre & Post intervention Questionnaire	77% of pupils participating in student sessions	Confidence scale 1-10	Start of student session	End of student session
PO6: Learning location	Pre & Post intervention Questionnaire	87% of pupils participating in student sessions	Yes/no & reason	Start of student session	End of student session
PO7: Feelings about outside	Pre & Post intervention Questionnaire	69% of pupils participating in student sessions	Open question	Start of student session	End of student session
PO8: More outside learning	Pre & Post intervention Questionnaire	72% of pupils participating in student sessions	Yes/no	Start of student session	End of student session

Table 12 - Pupil Outcomes for pupil comparison groups

Target Outcome	Research method/ data collection	Sample characteristics	Metric used	1st Return and date of collection	2nd Return and date of collection
A comparison Group was not used					

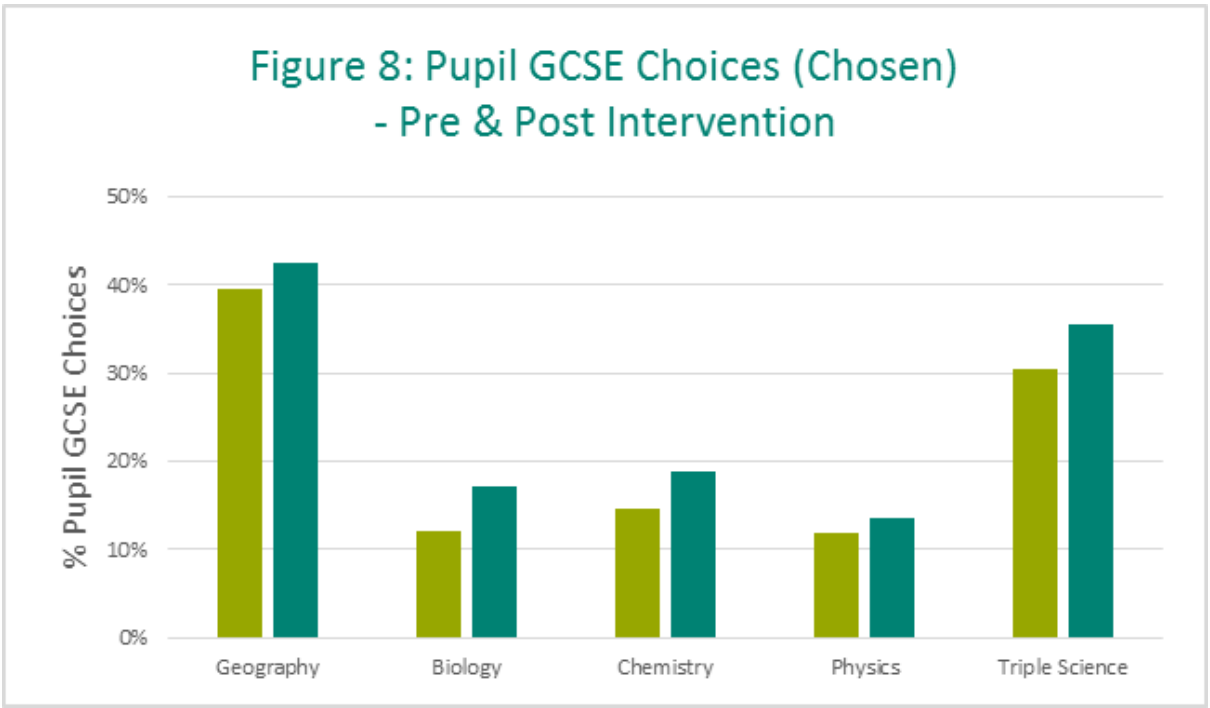
8.2.1 Commentary on Pupil Outcomes

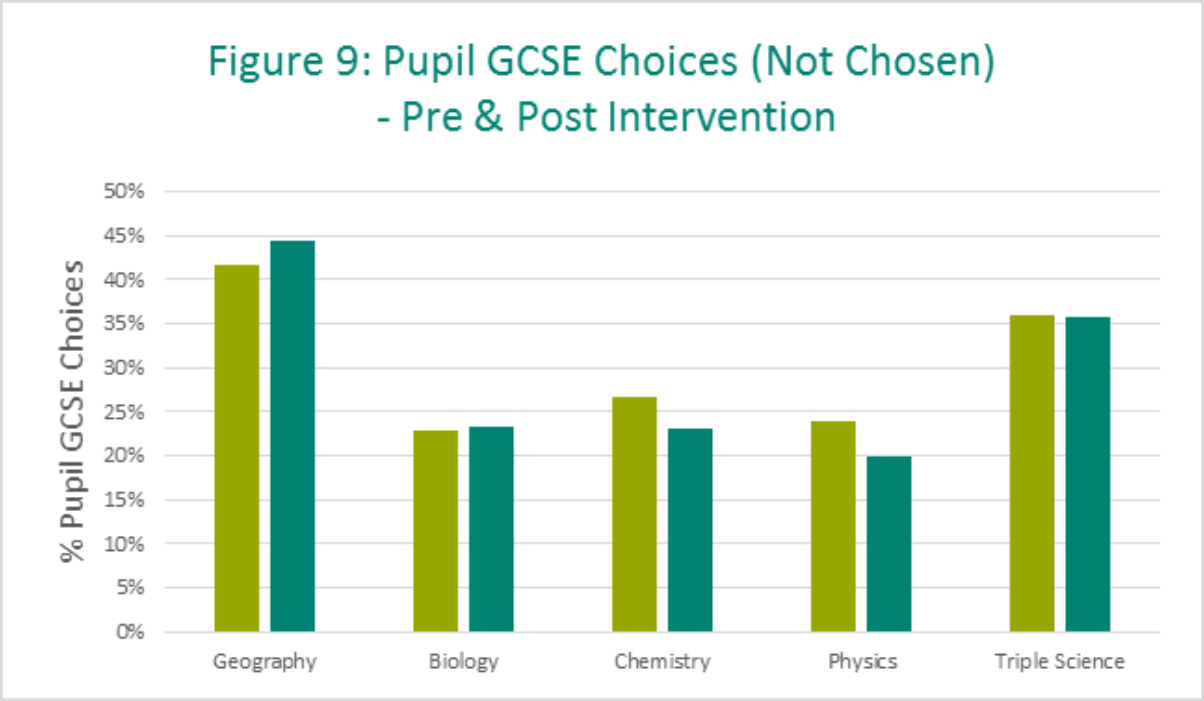
PO1: Science and Geography GCSE Uptake

An intended outcome was to influence the choice of GCSEs. Due to the timing of the pupil sessions, 45% of pupils that provided pre and post session responses had already chosen their GCSEs (in year 8) before attending a session. Indicative information was collected with pupils answering the question "Do you want to take any of the following subjects [at GCSE]?" The same question/choice of answers was given to all pupils.

Figure 8 shows that for students that had already chosen their GCSEs participation in the student session increased the percentage of pupils that would take subject at GCSE. Figure 9 shows an increase in the number of pupils that would study geography, no chance for Triple Science and Biology and a decrease for Chemistry and Physics.

If the data is combined, there is a 3% increase in pupils that would choose to study geography and biology, 2% increase in those that would choose Science, no change in the number of pupils that would study Chemistry and a 1% decrease in the number of pupils studying Physics.





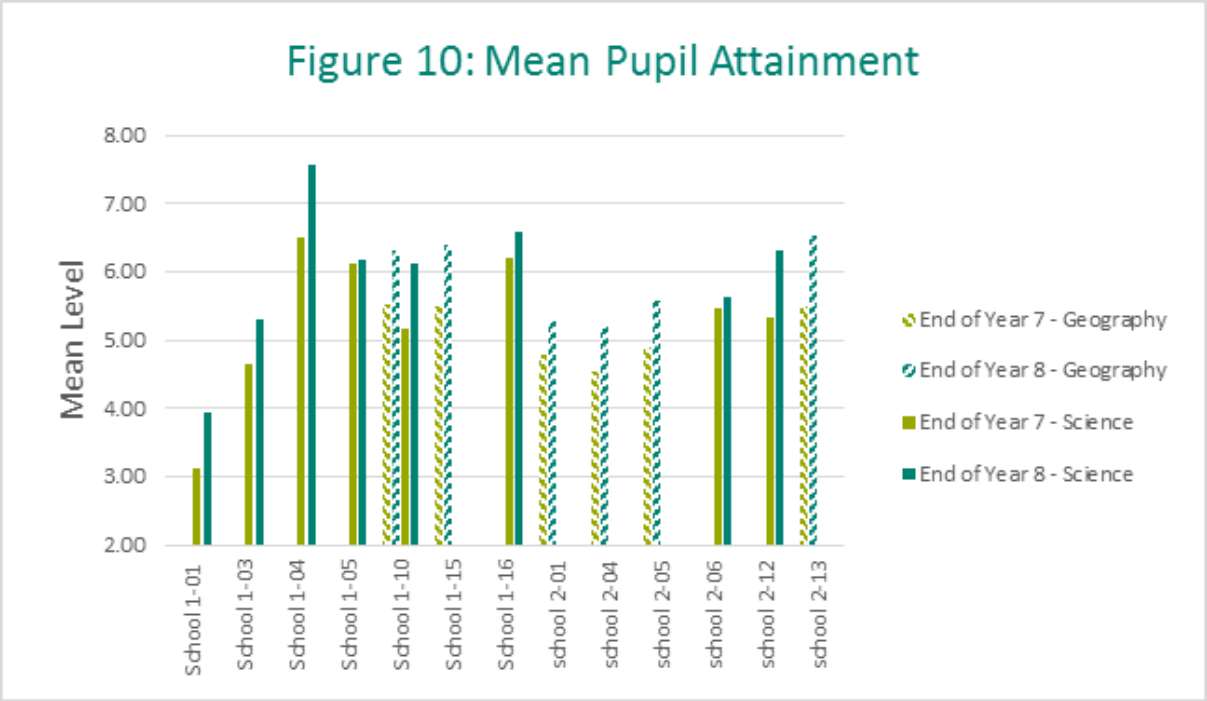
PO2: Reengage learners & PO3: Stretch learners

The past 3 years of data on pupil attainment was requested from all participating schools and collected from four. Using this data we intended to identify whether the project had a positive impact on attainment. The data provided did not show any trends and the data for the intervention year was not comparable with it. This was because schools were bringing specific cohorts of pupils e.g. gifted and talented or lower ability. The data collection methods did not allow us to identify which pupils were stretched or reengaged.

Students and teachers were observed during the pupil sessions by the external evaluator. They concluded *Students were actively learning during observed outdoor sessions in the Inspiring Learning project. They actively asked questions about their surroundings and observed, recorded and analysed data during investigations and activities. Students were actively interested in the changing built environment during the geography sessions and applied and learnt new skills in the biology session.*

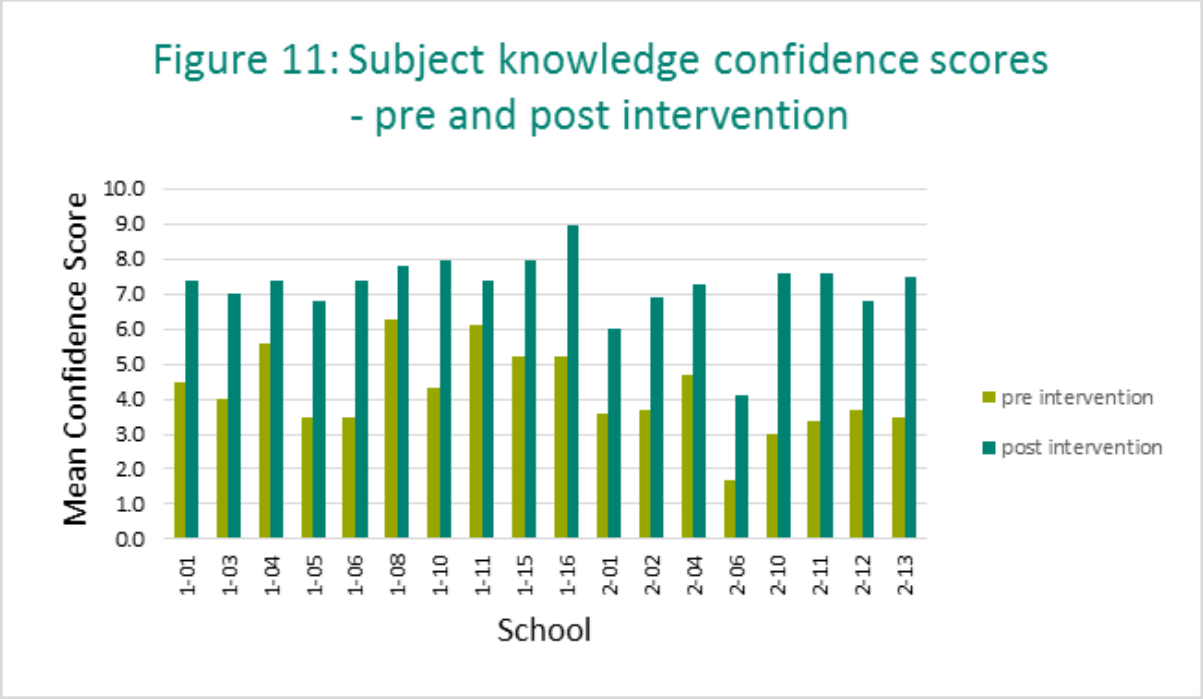
PO4: Increased Attainment

There has been an increase in pupil attainment in for the pupils participating in the student sessions. The mean science score improving from 5c to 5a and in geography improving from 4a to 5a. At the end of Year 8, pupils should be level 5a, the expected increase from year to year. Factors external to the project (i.e. in school) will have an influence on this, and it is based on the data collected we are unable to identify the impact the project has had on pupil attainment.



PO5: Pupil Subject Knowledge

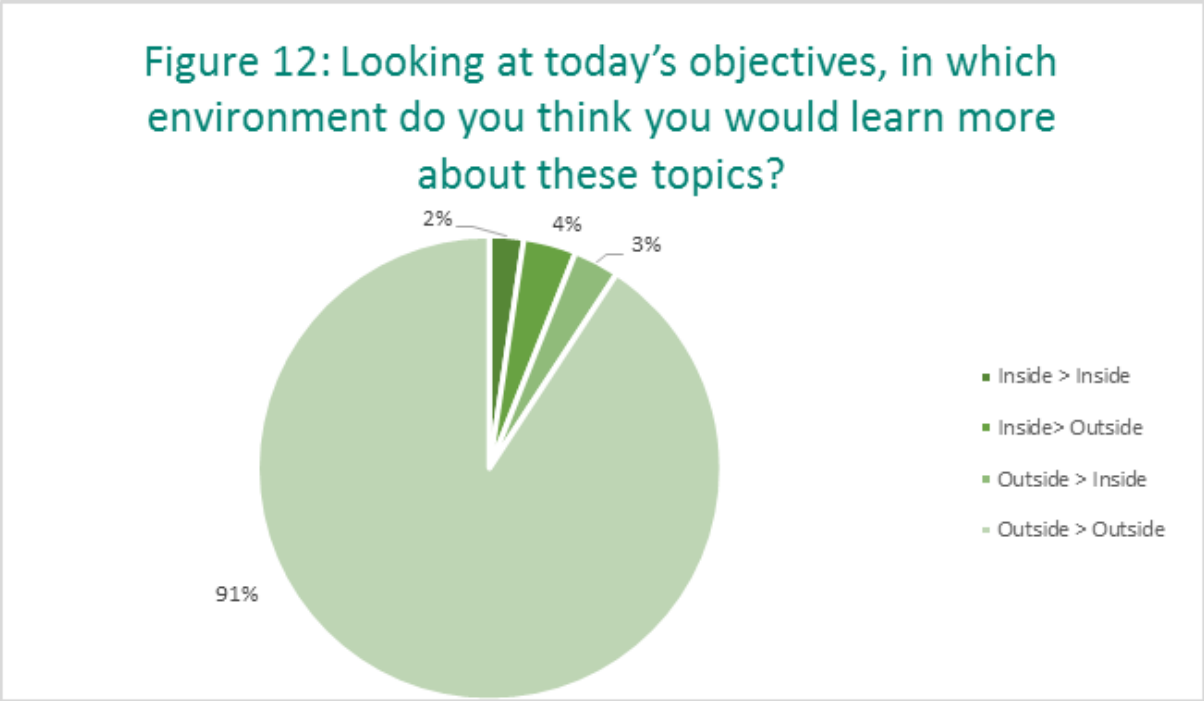
At the start of each student session, pupils were given their objectives for the session and asked to rate their subject knowledge for each one on a scale of 1-10. Each school had a different session tailored to what the teacher was currently teaching. Student session lasted from an hour to a school day. Figure 11 shows the mean subject knowledge pre and post intervention score for each school. The pre and post intervention scores are significantly different t(34) = 8.38 p=2.03.



PO6: Learning location reasons and PO7: Feelings about outside

Pre intervention, the objectives for the outdoor learning session were shared with the pupils and they were asked "looking at today's objectives, in which environment do you think you would learn more about these topics? Inside or Outside" (figure 12). 87% of pupils provided both pre and post intervention responses. Pupils were then asked to expand upon their answer with a linked open ended question: Why? 74% of pupils provided both pre and post intervention responses (figures 13, 15, 17, 19, 21 and 22).

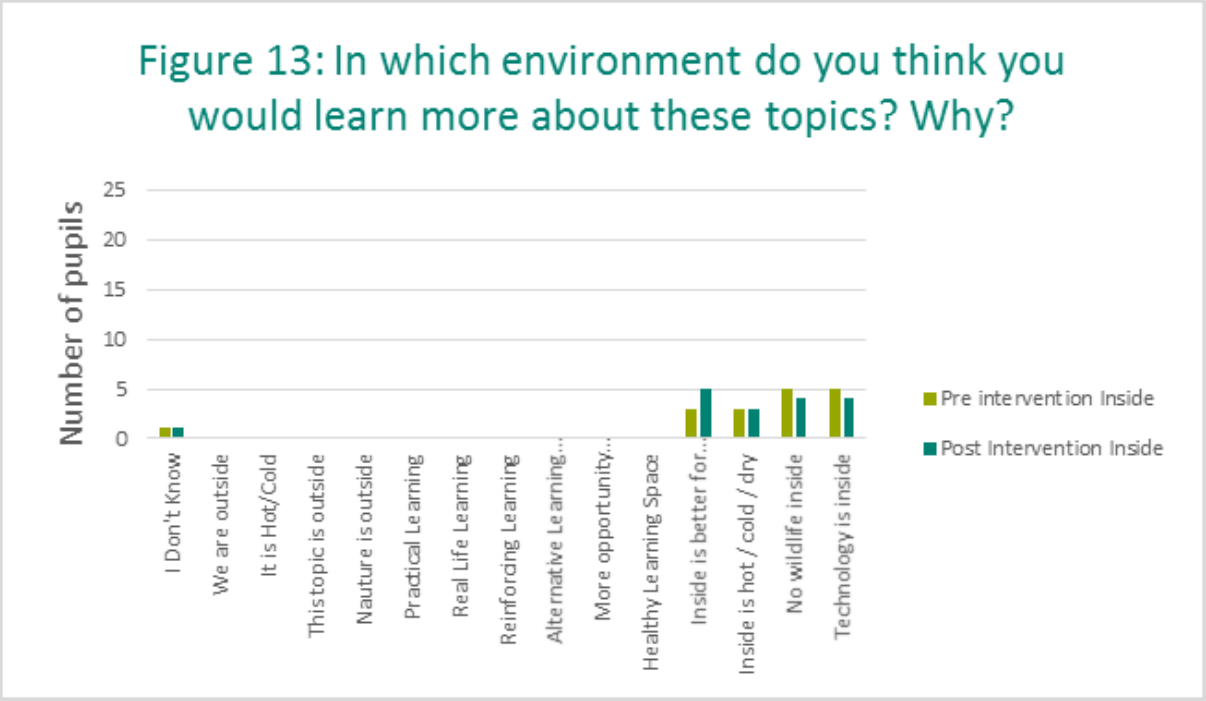
Pre intervention 94% of pupils thought that they would learn more about the objectives Outside (Figure 12), Post Intervention, this had increased to 95%. Participating in the project directly influenced 7% of the participating pupils to change their minds.



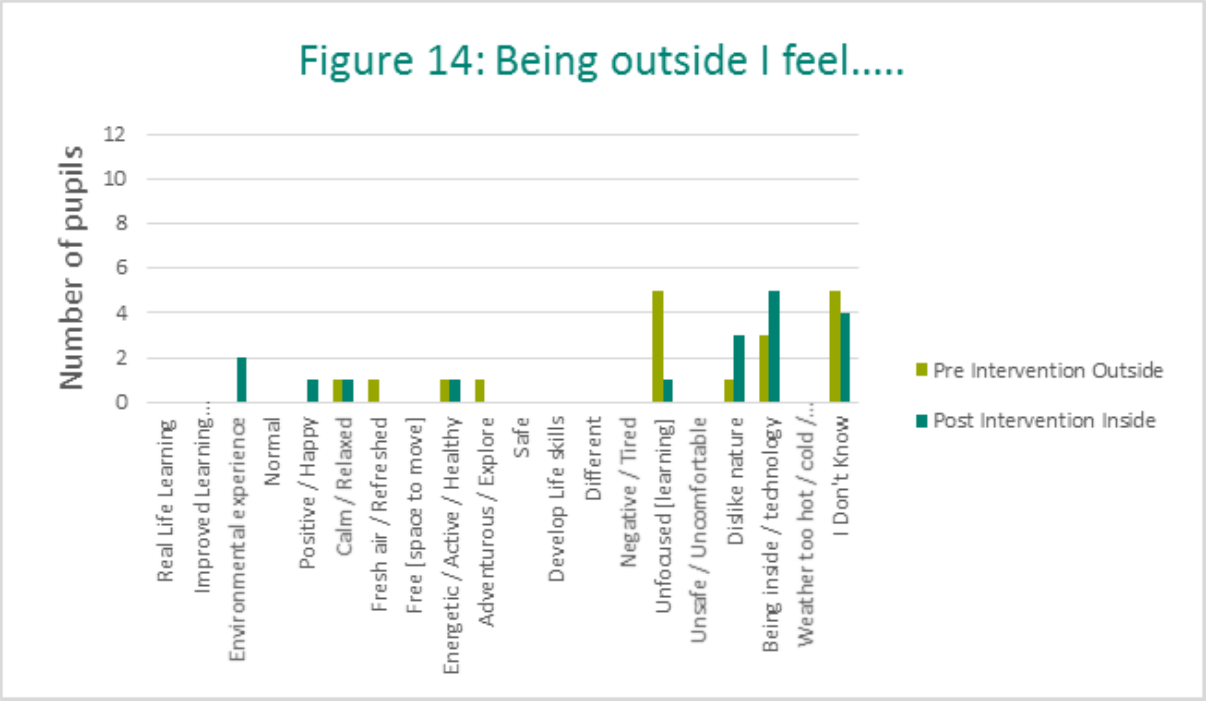
Pre and Post intervention, pupils were asked to finish the open ended statement 'Being outside I feel…' 69% of pupils provided both pre and post intervention responses. These responses have been categorised for ease of interpretation. The importance of outdoor learning for pupils has been demonstrated through data collection via pupil questionnaires (figure 14, 16, 18, 20, 21 and 22). Outdoor learning allows for real life learning to be experienced, thus incurring a multiplier effect. Pupils claim to feel more free and relaxed and open to learning via a different channel of learning and appreciate the real life context of being outside. The pupils recognised that not only were they learning what is required to be learnt from the National Curriculum but also various life skills such as confidence and independence alongside various learning tools and techniques such as improved group work, communication and observation skills.

The responses in the following section have been grouped into 4 pre intervention > post intervention categories (figure 12): Inside > Inside; Inside > Outside; Outside > Inside; Outside > Outside

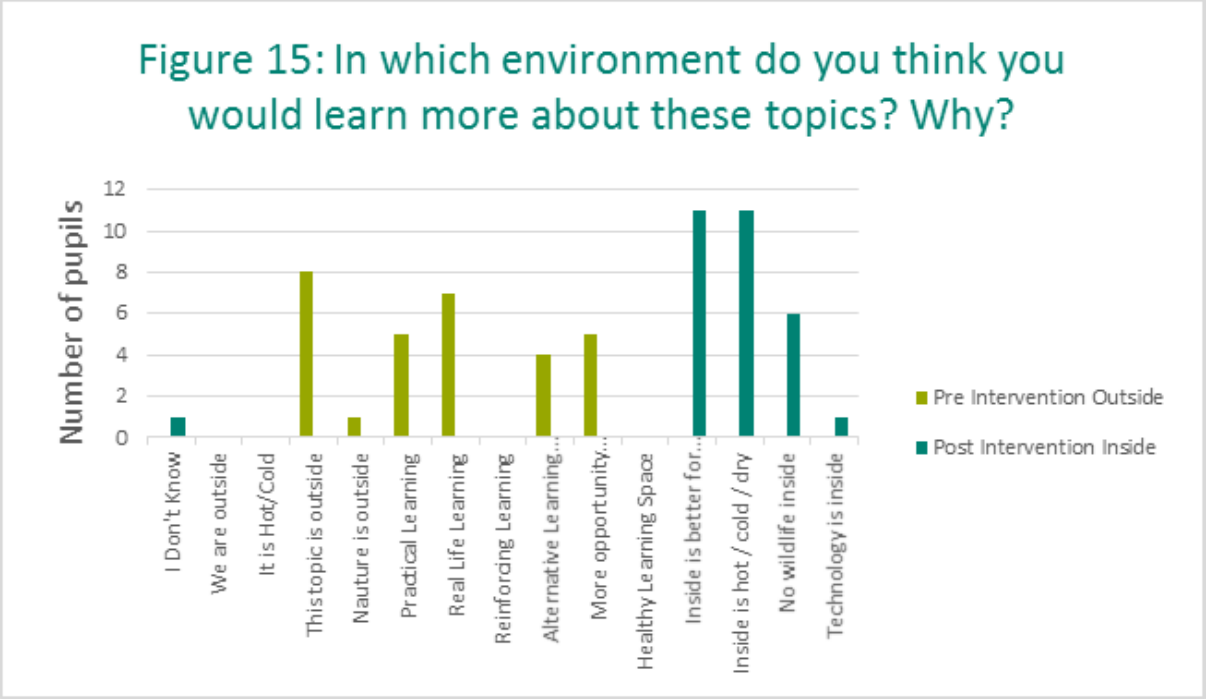
17 pupils commented pre / post intervention on why they would learn more inside (figure 13). Pre intervention the reasons given were that inside was a better learning environment, that there was access to technology, there was no wildlife (insects / hay fever) inside and that it was either colder or warmer depending on the weather at the time of the session. Post intervention, these same reasons remained.



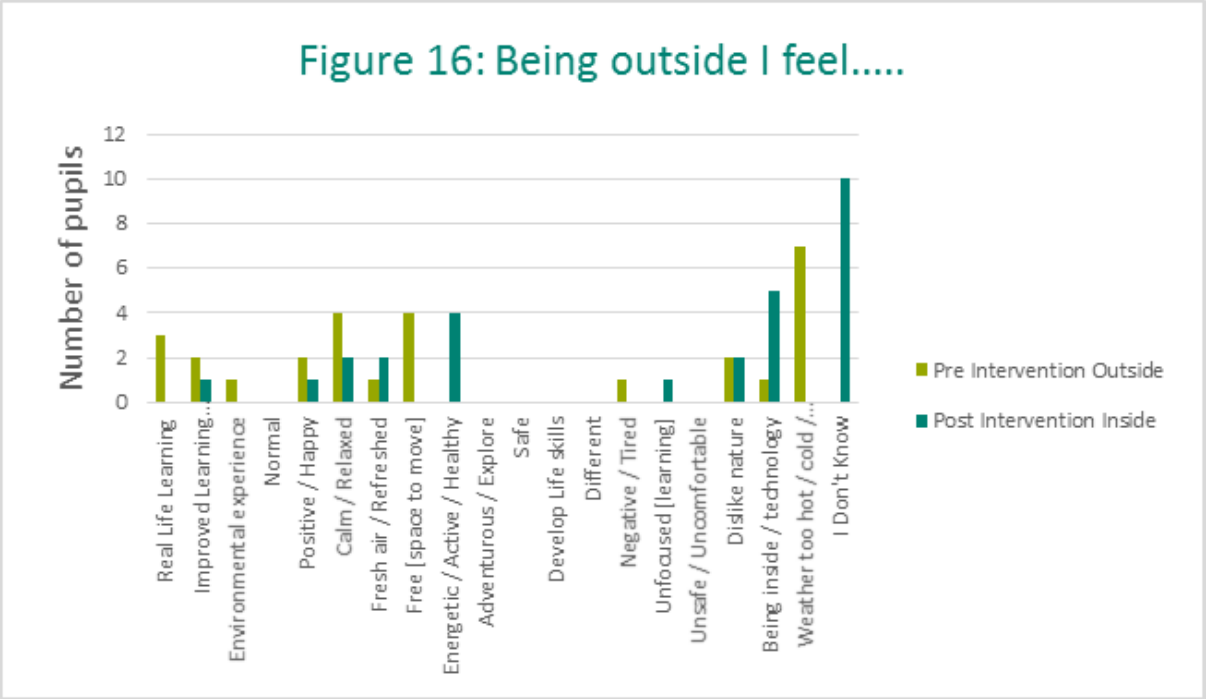
These pupils feelings to being outside were more likely to be negative to the outdoor environment or positive to the indoor environment, 45% of the pre intervention responses focussed on this (figure 14). Post intervention these were still strong reasons with 45% of the responses split across the same categories. However there was a small increase given for positive outdoor experiences.



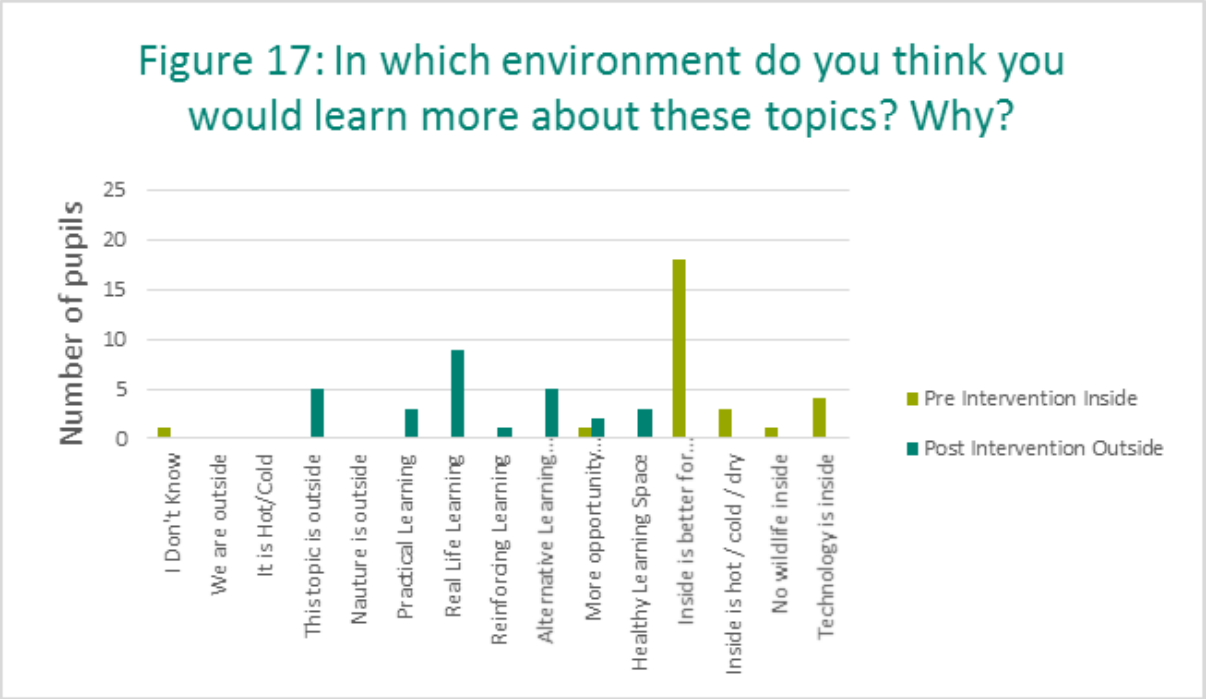
37 pupils changed their response from pre intervention 'outside' to post intervention 'inside' (figure 15). Pre intervention the main reasons given was that it was an outside topic, practical and real life learning. Post intervention the weather (at the time of the session), negative reaction to wildlife (insects) and access to technology impacted upon the pupils responses.



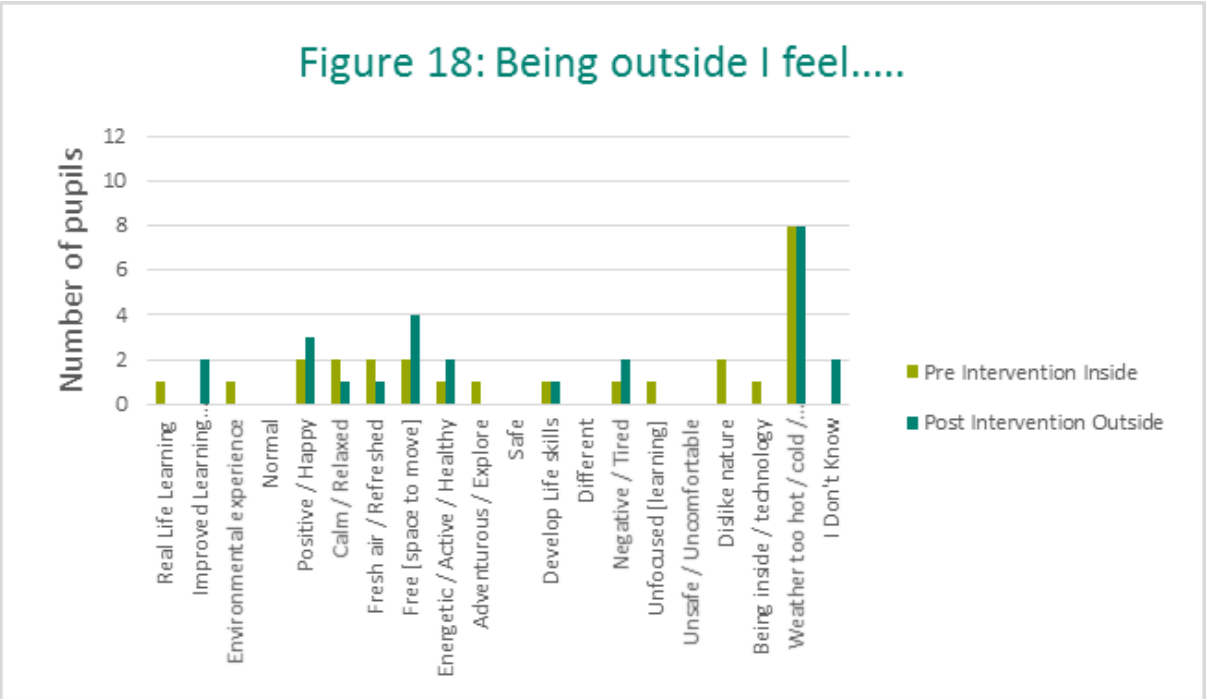
30 "outside to inside" pupils provided more detail about their feelings (figure 16). These pupils are likely to have positive outside feelings which then become negative.



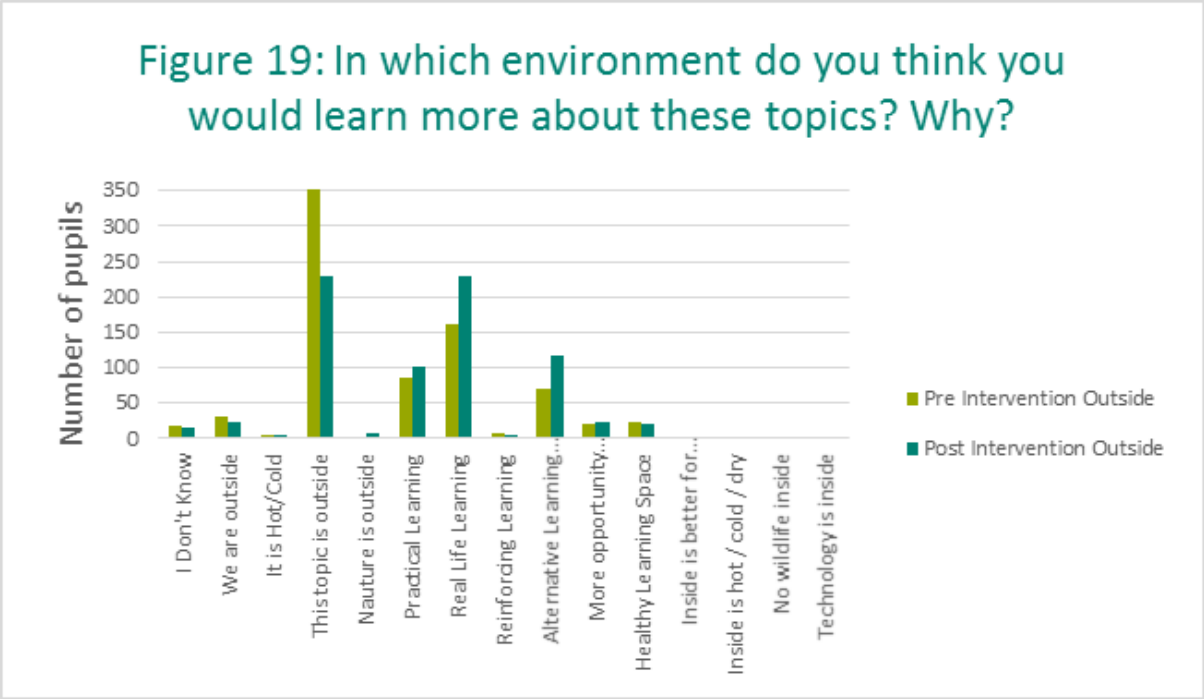
32 pupils thought they would learn more inside pre intervention, changing to outside post intervention (figure 17), the reasons given mirroring those in figure 15.



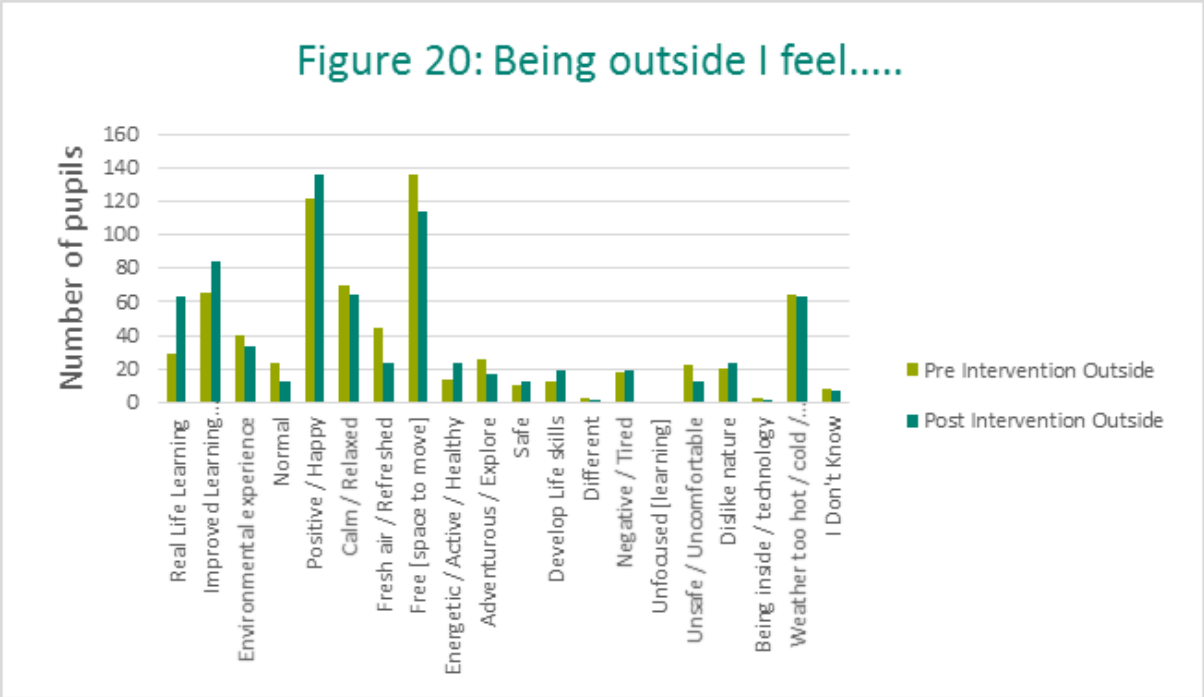
These pupils were more likely to move from positive indoor feelings to positive outdoor feelings. 26 pupils gave responses (figure 18), showing this trend.



915 pupils felt both pre and post intervention that they would learn more by being outside. The 'topic' or subject being based outside was the main reason given pre intervention. Post intervention, this is still significant, however comments provided from 729 pupils (figure 19) show that the experience extended the pupils understanding making them more likely to recognise the learning was due to it being practical, involving studying real life, or alternative learning styles.



The number of pupils identifying real life / learning in response to 'Being outside I feel…' (figure 20) increased from 18.5% to 24.6%, with other positive outdoor categories varying up to 3% between pre / post intervention. There are some comments related to a preference to be indoors which show small variations (up to 2%) between pre and post intervention.



The responses provided by the pupils give more insight into their thinking. The tables below show some examples against each category used in Section 8.2.1. (All spellings and grammar as written by the pupils)

Figure 21 - Pupil Answers to the question: Looking at today's objectives in which environment do you think you would learn more about these topics? Why?

Category	Pre intervention Why?	Post intervention Why?
We are outside	• because were having a lesson outside	• because we went outside
It is Hot / Cold	• because it is sunny	• because it is a nice day.
This topic is outside	• Due to the fact that the question are on enivirоment • Because a pond is not inside but out. • As the topics we are covering are held outside	• Because all of the plants we investigated were there and that is the habitat • Becasue all the insects, plants and thier habbitats are found outside
Nature is outside	• Because you would be around nature	• more next to nature
Practical learning	• Because it's more practical and first hand • because I can actually see what's going on and can experiment with the objectives and see how to do it myself	• Because I know I can navigate in real life now. • Because you can see what is true and not for yourself and you can ask the public questions
Real Life learning	• Because it's more relistic and it better to experce it and see it in real life • Becasue you can see the changes in the environment • because then you can sees environment + buildings	• As you are able to see the actual effect in real life • because experiencing it and seing it for ourselfs made it easyer • Because inside is pictures but outside you feel touch, hear, smell.
Reinforcing learning	• Because the things that you learn in class could be outside class	• Because you see the things that you see in the book • because it gave us a nice experience and helped use with the lesson that we were set
Alternative Learning Styles	• I work better outside as I am a kinsesitic learner • its more physical T rember things that way • Because it helps me remember more.	• Because I will remember it • because It's more fun • cause you experience it and you get stuck in more
More opportunity outside	• We can explore further compared to indors • because its bigger more space and	• bigger • Because I feel less crowded • its awesome and interesting

	stuff to do	
Healthy Learning Space	• Because there is a large area, and we feel comfortable and free. Consequently we learn easier and more	• Because I feel free, and there's more to learn • Because then I am able to work better in a calmer environment.
Inside is better for learning	• I can concentrate more easily.	• The outside is more dangerous. • Because you don't really need to see the stuff to understand if
Inside is hot / cold / dry	• I think we should because it is cold and wet outside	• Because it is wet and cold outside
No wildlife inside	• Because I will get hayfever • because theres more bugs outside	• becasue theres no bugs • hayfever
Technology is inside	• Computers and books are inside. • because inside we have internet and most of the internet is true	• google • Computers are more accurate than our results.

Figure 22 - Pupil Answers to the question: Finish this sentence: Being Outside I feel…

Category	Pre intervention Being Outside I feel…	Post intervention Being Outside I feel…
Real Life Learning	• Interested in my surroundings. • more involved with the real world	• A bit irritated by nature but also fascinated • the need to explore and see things Ive never seen
Improved Learning Opportunity	• curious because I might learn something new • more open to learning • like I can learn better	• clever • like learning is fun. • more concentrated on the work
Environmental experience	• One with nature. • Back to nature and happy • connected to Nature, fresh	• Aware about the environment • more 'intouch' with nature
Normal	• Normal • OK	• Fine • Normal • OK
Positive / Happy	• Better. • i feel good • Free, fun, happy. • excited and elated	• most welcome • Fun and excited. • happy and estatic • awesome
Calm ./ Relaxed	• really calm • peaceful, relaxed • more cofeable [comfortable]	• Calm and collective and settled. • free, happy and relaxed • peaceful, relaxed, intrigued.
Fresh air / Refreshed	• free because of the fresh air • fresh and renewed	• Nice and refreshed. • Fresh air

Free (space to move)	• Free to move, and happy. • Being outside I feel free.	• free and not trapped inside • free to move around • free to do what i want
Energetic / Active / Healthy	• excited and energetic. • more enthusiastic and active.	• less tired than being inside • very energetic • more active and exciting
Adventurous / Explore	• exciting, adventurous • like i can explore	• Free because I can explore. • adventurous, free, awake, spaceous
Safe	• safe but only in well lit places with lots of people	• Being outside I feel safe. • ok because its safe.
Develop Life Skills	• That I can communicate widely and freely. • Being outside I feel more confident and free	• free and independent • like i can interact with people • a lot more confident after this
Different	• different	• Weird
Negative / tired	• tired • bleh and urgh	• Socially awkward • tired, exhausted and warm
Unfocussed learning	• unfocused	-
Unsafe / Uncomfortable	• Unsafe. • cold, embarresed • a bit nervous.	• uncomfortable • paranoid • Exposed to dangers and otehr people.
Dislike Nature	• Disgusting coz of spiders • smelly because the natural environment smells • very vurable to grass as I have hayfever	• scared of bugs • dirty. • cringey because of the insects but its more spacey
Being inside / technology	• That it isn't very me as I prefer to be inside with electrical equipment (computers, technology, etc..)	• that I should still remain with technology as I want to spend my days with that rather than nature
Weather too hot / cold /. Wet	• really warm... • really cold	• Hot :) • cold, wet and more cold

PO8: Outside Learning

Pupils were asked if they would like to experience more outdoor learning sessions in the future. 72% of pupils gave a response pre and post intervention. How pupils choices changed is shown in figure 23. Pre intervention, 71% of pupils wanted more outdoor lessons, increasing to 77% post intervention. 6% of pupils did not want more outdoor learning increasing to 8% post intervention and 23% did not know pre intervention, decreasing to 14% post intervention.

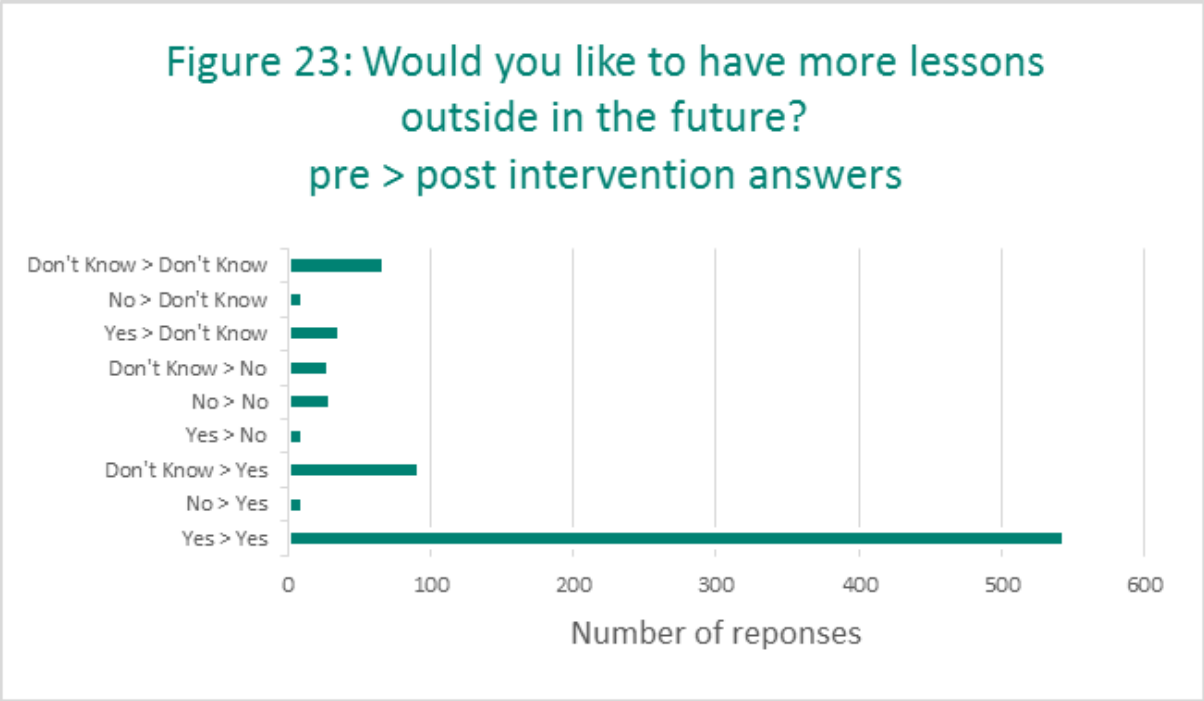


Image 15: Teacher participating in CPD session: biology, species diversity

8.3 Wider System Outcomes

Table 13 – Wider System Outcomes

Target Outcome	Research method/ data collection	Sample characteristics	Metric	1st Return and date of collection	2nd Return and date of collection
SO1: Increased use of networks	Number of teachers engaged with network meetings, etc	-	-	-	-

8.3.1 Commentary on School System Outcomes

SO1: Increased use of networks

The project funding enabled us to create links between schools and subjects. One teacher commented (2.04.01) that the project was "an excellent collaborative approach to fieldwork, ensuring that more outside learning opportunities exist. Great to network with other teachers and really helpful [FSC] staff".

The hope was that teachers would take this opportunity to work more collaboratively. Geography teachers in year 1 did so, by organising drinks at the local pub!

8.4 Impact Timelines

The impact of the project would have happened over a range of timescales. The short term impacts occurred as expected, longer term impacts can not be evaluated in the project timescale.

Immediate impact on teachers would take place at the CPD session, increasing subject knowledge. It would be expected that teachers would take this and embed it through independent learning. The continuing impact of embedding out of classroom learning in the school curriculum may take 3 years and be dependent upon both the teacher and SLT enthusiasm and curriculum requirements.

Pupils would have seen an impact immediately, and this is shown in their subject knowledge. The impact of their learning will continue through their GCSEs and if they choose Science or Geography at Alevel will impact upon their learning over the next 5 years.

9. Reflection on overall project impact

The evidence gathered for the Inspiring Learning through Outdoor Science and Geography Project supports the Theory of Change.

- Through the 28 project CPD sessions and 113 student sessions, the confidence and competence of teachers in out of classroom learning linked to curriculum content increased. Teachers were positive about the impact of the project on their confidence with teachers reporting leading new sessions as a result of taking part.
- The approach of multiple CPD sessions, allowed teachers to network at CPD events, sharing knowledge and expertise with each other, alongside gaining new knowledge and confidence from the CPD sessions. However, teachers are unlikely to create new networks, without a structure in place to support them.
- By attending the CPD events, teachers were exposed to ideas, resources and materials they could use and adapt, not only with year 8 (target) pupils, but with students in all year groups. Evidence shows the teachers have also created new resources, not directly linked to content of the CPD.
- The innovative approach of integrating pupil sessions into the CPD sessions, meant teachers were able to see the activities in a 'real setting', becoming involved in delivering the activities with their own pupils. This broke down their own barriers to out of classroom learning, enabling them to deliver the session in the future, but also demonstrate the positive benefits to other teachers.
- By working with the teachers and their own pupils, the school now has their own resources and activities for use with future year groups. Resources developed as part of the project are available for all schools to access and use.
- The student sessions demonstrated the impact of out of classroom learning on pupils learning, and enabled teachers to experience this in a 'safe and supported' environment. Through this demonstration, the teacher confidence in repeating the session themselves increased.
- The student sessions had a direct impact on pupils, demonstrating a significant improvement in their subject knowledge as a result of the session.
- There is evidence that participation in out of classroom session does increase the likelihood that a pupil will continue to or choose to study the subject at GCSE.
- The pupils recognise that real life or practical learning is an important way of engaging with the subject, and through taking part in out of classroom sessions, they do recognise this. However weather is an important factor and the very hot, cold or wet sessions are likely to influence them.

The project evidence supports the LSEF aims to cultivate teaching excellence through investment in teachers, create new resources for schools in the priority subjects of Sciences and Geography and create cultural change and raise expectations in the London school system. The project supports the LSEF meta –evaluation theme 4: approaches taken by LSEF projects to promote subject knowledge and teacher confidence for secondary school teachers and pupils.

10. Value for Money

10.1 Apportionment of the costs across the activity

Table 14 is an indicative breakdown of project costs against project activity, this can only be provided as an indicative measurement, and not an accurate figure. The highest percentage (42%) of time was spent delivering student sessions. This included liaison with schools, preparation of materials and delivery of the day. 20% of project time was spent on delivering CPD sessions to teachers. The number of CPD sessions would not change if there were more or less more teachers, though it would have reduced with more student sessions.

Table 14 – Wider System Outcomes

Broad type of activity	Estimated % project activity	£ Estimated cost, including in kind
Teacher CPD (face to face/online etc)	20	27,592
Events/Networks for Teachers	0	0
Teacher Supply costs	5	31,750
Teacher 1:1 support	0	0
Events/Networks for Pupils	42	43,314
Producing/Disseminating Materials/Resources	10	2,500
Validation	5	10,829
Management & Admin	10	18,042
Evaluation	8	7,500
TOTAL	**100**	**141,527**

10.2 Commentary of value for money

There is no known similar project to compare the project costs to. From the work that FSC have done on past projects, this collaborative to CPD was identified as being the focus of this project. Unlike other projects, the teachers had 5 CPD contact sessions, each one building on and developing prior knowledge and experience.

Compared to a suite of CPD sessions hosted by one of the project boroughs or a subject organisation, plus the cost of a key stage 3 trip, the project costs per participating school, are inline with these costs. In addition, the teachers benefitted from the additional support, networking opportunities and progressive approach to improving confidence and knowledge.

One of the major cost areas was CPD for teachers, and this includes a payment to the school to contribute to the cost of supply cover and participation. This cost was included at the suggestion of the GLA as it had been identified as a barrier to participation. Whilst the schools have been appreciative of the funding, they have not been forthcoming in claiming it, and it did not seem to be a major influence on participation in the project.

10.3 Value for money calculations

This project did not work with a comparison group.

Image 16: Pupils participating in student session: geography field sketch

Image 17: Pupils participating in student session: biology, species diversity

11. Reflection on project delivery

The Inspiring Learning project has been successfully delivered over 2 academic years 2013/14 and 2014/15. Each year has seen a different cohort of teachers attend CPD session and pupils attend student sessions.

Overall 28 CPD sessions and 113 student session were delivered reaching 75 teachers, 86 additional teachers and 1,494 year 8 pupils. Section 6 outlines how this differs from the planned activities.

The overall outline of the project (CPD and student sessions) was well received by teachers. The project structure was based on previous FSC projects, but was the first time that it had been targeted at key stage 3 teachers, with the student sessions and CPD events linked in this way.

11.1 Key Enablers and Barriers to Achievement

- **Recruitment of schools** was easier to deliver in boroughs where there is a **strong borough lead** (schools improvement team or youth service) or school network which we have been working through. This has meant specific teachers receive the information at an appropriate time and from a known source. Where possible this approach was used alongside contacting schools directly. The number of teachers recruited was less than anticipated, this is likely to be because the information did not get to the most appropriate person.
- Schools with **SLT engagement** have been more involved in the whole project than where an individual teacher is leading. Where an SLT member is involved, the schools is mode able to release pupils for student sessions and are more likely to have submitted the requested student data. In year 2, a member of SLT was required to sign the registration form, this did not have as strong an impact as expected.
- The aim of the project was to have four teachers from each participating school. For a variety of reasons teachers have not been able to **commit** to the project, including stress of NQT year, not having enough teachers and having too many teachers off timetable.
- The project aimed to **develop networks** within and across schools. By offering four teachers places, it was expected they could support each other and the project would have a greater impact and embed learning further into and across the school. It was found that teachers did not usually work across departments in their school, and were more likely to use existing networks between schools, than create new ones.
- The project started in October, at this stage much of the academic year diary would already be planned. A longer **lead in time** (at least one preferably 2 terms) to plan and promote projects would have given more opportunity for both project leads and schools.

11.2 Management and Delivery Processes

The project management and delivery process was effective.

- In year 1 a **project officer** was employed to deliver the project. When they left at the end of year one, a significant of knowledge was lost. For year 2, the project was delivered across a team of people allowing subject specialists to work with teachers, and broaden

the project knowledge across more staff. This was a more successful approach and has allowed us to embed more learning form the project across a wider team.

- **Timetabling** of CPD sessions is crucial in ensuring attendance. There are many demands on teacher time, both in and out of the classroom, and the timing of CPD sessions needed to account for this. The teachers were asked to suggest the most appropriate times for the CPD sessions in order to ensure maximum possible attendance. Where teachers were unable to attend, in some cases, they could attend another equivalent course, or use materials online to complete the work.
- Schools found it difficult to plan and attend **student sessions**. This was despite the content being directly related to the topics and curriculum they were following. Reasons given included cost, specifically travel (despite funding), timetabling, risk assessments and competing with other subjects for student's time. In some cases, the school or teacher disengaged from the project with no explanation.
- The CPD sessions were offered free of charge. This offer was based on finances being a barrier to participation. Schools were able to claim **financial support** for participating in the CPD sessions. The amount of £150 per CPD session was held back until the end of the academic year once the school had participated in the student sessions and provided the pupil and teacher data. To make the process straight forward, teachers were provided with a document (paper and email) to pass directly to their finance department. Despite this, schools have had to be chased multiple times requesting an invoice.
- **Class sizes** were smaller than anticipated. This was an advantage for delivery as it was easier to work with the teacher and pupils to deliver the session, but had an overall impact on the student numbers.

11.3 Future Sustainability and Forward Planning

This project was a successful model of CPD and student sessions, and was beneficial to the teachers and pupils that engaged with it. Section 4.2 outlines how this project may be delivered in the future. For future projects:

- Broaden the range of participating teachers / schools to allow multiple department teachers to attend sessions.
- Develop the project across more boroughs, with opportunity to engage with the same schools across 2 years and increase the size of the project in year 2.
- Link more closely with subject organisations (e.g. Geographical Association, Royal Geographical Society, The Association for Science Education, The Institute of Physics, Royal Society of Biology, Royal Society of Chemistry) to provide a network to direct teachers.
- Develop an evaluation plan at project inception, with a better understanding of the statistics and level of evaluation required. Following this, a more focused set of data collection and analysis tools could be used.

12. Final Report Conclusion

Inspiring Learning through Outdoor Science and Geography uses the City as a location to inspire teachers to take their lessons outside the classroom by increasing their subject knowledge and confidence in delivering outdoor learning. 75 teachers and 1,494 year 8 pupils from 30 schools across Greenwich, Lewisham, Hackney, Newham, Tower Hamlets and Waltham Forest, have participated in teacher CPD training and outdoor student learning sessions.

The project has been assessed through data collected from participating schools, questionnaires and subject knowledge tests. An external evaluation has been carried out to collect additional supporting data on confidence and assess quality of delivery.

Key findings show that:

- Teacher confidence in delivering out of classroom learning has improved (TO1) and fieldwork subject knowledge has increased (TO2).
- Teachers that have participated in the project are more able to organise and lead out of classroom learning with all school pupils (TO1).
- Teachers have access to a bank of out of classroom science and geography resources (TO3).
- Pupils participating in student sessions subject knowledge significantly increased (PO5)
- Participation in out of classroom sessions influences pupils in their choice of GCSE subjects, suggesting they are more likely to continue to study the subject (PO1).
- Through participation in out of classroom sessions, pupils engaged in real life, practical/first hand learning (PO7 & PO8) and recognised this as important in understanding the topics (PO6). They also developed life skills such as communication and confidence.
- The project was unable to show that it had an influence on borderline pupils (PO2) or stretching high achievers (PO3), this was due to the structure of the project, timescales involved and no comparison group for evaluation.
- The project was unable to demonstrate the participating teachers made greater use of networks (SO1) or that there was an impact on pupil attainment (PO4), this was due to the type of data collected making comparison across the project unachievable.

The approach of the project was to integrate teacher CPD with student sessions, giving the teachers the opportunity to see the CPD content in action and giving them a chance to work with their pupils.

By widening the offer to more boroughs, the participation may have increased, but the focus on key locations enabling networks to develop between schools would have been reduced.

Image 18: Pupils participating in student session: chemistry, air quality using lichens

Image 19: Pupils participating in student session: geography field sketch

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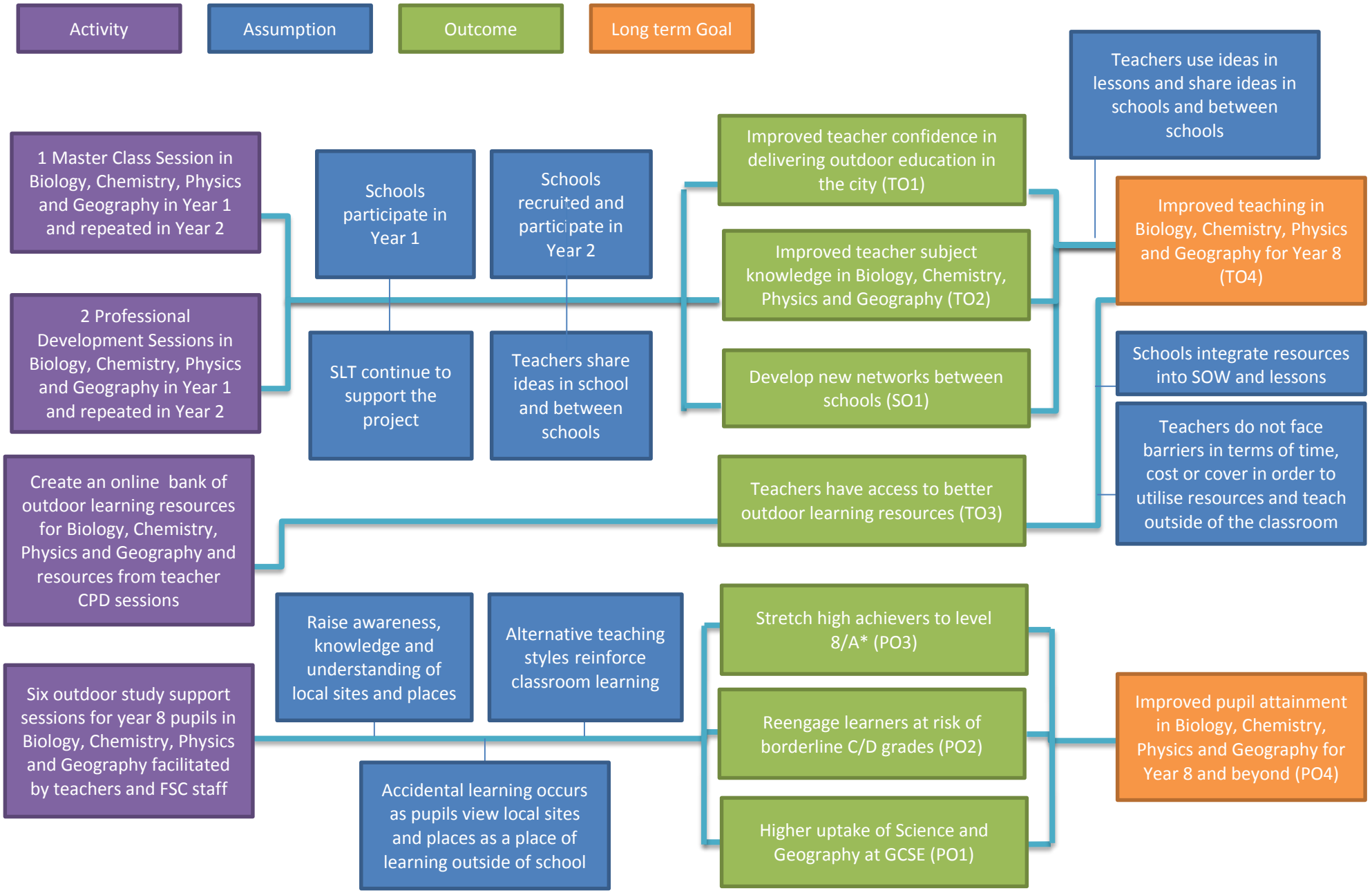
Inspiring Learning through Outdoor Science and Geography Appendices

Image 20: Pupils participating in student session: chemistry, air quality using lichens

Appendix 1: Inspiring Learning through Outdoor Science and Geography Theory of Change



Appendix 2: Inspiring Learning through Outdoor Science and Geography Evaluation Framework

	Outcomes	Indicators	Baseline data collection	Impact data collection
Teacher outcomes **Sub Groups** As part of establishing the baseline, the characteristics of the eligible cohort should be analysed across the following sub groups: ☐ NQTs ☐ 3 years + ☐ Primary/ secondary ☐ Other (project specific) These should be expressed as a % of the whole group. **Churn** Throughout the programme thorough records of any "churn" of teachers leaving or joining the intervention group must be kept. In order to do this records must be kept of: ☐ Unique teacher identifier ☐ Engagement date ☐ Disengagement date and reason	**Teacher Outcome 1** • Increased teacher confidence in using the city as a resource for teaching	• Increased teacher scores in confidence surveys to be completed by all teachers involved in the intervention	• Scores collected for individual teachers will be collected through the use of the Teacher sense of Self-Efficacy Scale at the start of first professional development session January 2014 (Cohort 1) and October 2014 (Cohort 2)	• Scores collected for individual teachers from post intervention Teacher sense of Self-Efficacy Scale surveys July 2014 (Cohort 1) and July 2015 (Cohort 2) • Interviews/ focus group of a sample size of a 10% of participants to moderate survey findings July 2014 (Cohort 1) and July 2015 (Cohort 2)
	Teacher Outcome 2 • Increased subject knowledge in Biology, Chemistry, Physics and Geography	• Increased teacher scores in subject knowledge tests to be taken by all teachers involved in the intervention	• Scores collected for individual teachers from pre intervention subject knowledge tests at the start of first professional development session January 2014 (Cohort 1) and October 2014 (Cohort 2). *These tests will be designed in conjunction with our external moderator from the IOE and her colleagues.*	• Scores collected for individual teachers from subject knowledge tests after third professional development session July 2014 (Cohort 1) and July 2015 (Cohort 2)
	Teacher Outcome 3 • Use of improved subject-specific resources in Science and Geography	• Development of improved subject specific resources • Uptake of new resources	• Audit/sample scrutiny of existing subject specific resources being used December 2013(Cohort 1) and December 2014 (Cohort 2) *The aim of the audit is to catalogue existing resources that teachers are already using, these will then form the foundation of the resources developed for this project. This development will occur as part of the delivery of teaching sessions and will be peer reviewed by participants, FSC staff will provide expert knowledge.* • Launch date of new resources	• Independent review of new subject specific resources and old audited resources July 2014 (Cohort 1) and July 2015 (Cohort 2) • Use of new subject specific resources in lessons (through work scrutiny). Usage analysed against performance in observed lessons. This will be undertaken as part of the external evaluation.
	Teacher Outcome 4 • Delivery of higher quality teaching including subject-focused and teaching methods in Science and Geography	• Improved teaching performance in observed lessons to be conducted for a sample size of 10% of participants. With a small sample of those to be independently moderated	• Standards collected for individual teachers from pre intervention observations (i.e. percentages of teachers at each level) December 2013 (Cohort 1) and December 2014 (Cohort 2). Observations that are conducted can be anonymised as we have unique identifier numbers for each participant. *We will be conducting observations for a sample size of 10% of teachers by asking for volunteers with an independent moderator, our external evaluator from the IOE, in Science and Geography using the Quality Badge assessment that is used to measure standards across the FSC which has been designed using the Ofsted standards*	• Standards collected for individual teachers from observations of 10% of participants after Yr1 July 2014 (Cohort 1) and Yr2 July 2015 (Cohort 2) of intervention. Samples will be chosen by asking for volunteers. *In year 1 we will use volunteers due to timescale issues however we will look at using a different method for the second year by doing a draw*

	Outcomes	Indicators	Baseline data collection	Impact data collection
Pupil outcomes **Sub Groups** The characteristics of the eligible cohort should be analysed across the following sub groups: ☐ LAC continuously for 6 months+ ☐ FSM ☐ FSM at any time during last 6 years* ☐ EAL ☐ Gender ☐ Ethnicity ☐ Statement of SEN or supported at School Action Plus ☐ Started respective Key Stage **Churn** Throughout the programme thorough records of any "churn" of pupils leaving or joining the intervention group must be kept. In order to do this records must be kept of: ☐ Unique pupil identifier ☐ Engagement date ☐ Disengagement date and reason ☐ below expected level, at expected level, above expected level All characteristics should be captured as part of establishing the baseline and data should be collected to enable all outcomes to be analysed across these sub groups.	**Pupil Outcome 1** • Increased take up of Science and Geography subjects	• Increased numbers of pupils taking up Science and Geography subjects at GCSE – as the project deals with year 8 only cohort 1 will see results from actual GCSE uptake in July 2015	• Trend data: numbers of pupils taking up Science and Geography subjects at GCSEs 3 years prior to intervention January 2014 (Cohort 1) and October 2014 (Cohort 2) • Intervention group: pre intervention survey of likely subject choices in relevant subjects at next stage March 2014 (Cohort 1) and March 2015 (Cohort 2)	• Intervention group: numbers of pupils taking Science and Geography subjects GCSEs (analysed by subject & cohort profile) July 2015 (Cohort 1) • Intervention group: post intervention surveys July 2014 (Cohort 1) and July 2015 (Cohort 2) of likely subject choices in relevant subjects at next stage
	Pupil Outcome 4 • Increased educational attainment and progress in Science and Geography	• Increased attainment levels and sub levels compared against a comparison group* • Reduced gap between attainment of different sub-groups/disadvantaged groups of pupils (e.g. FSM, LAC, by gender etc.)	• Intervention group: assessed level for previous year January 2014 (Cohort 1) and October 2014 (Cohort 2) • Comparison group: assessed level for previous year January 2014 (Cohort 1) and October 2014 (Cohort 2)* • Trend data: Actual attainment levels for the three previous year 8 groups *We will be measuring pupil attainment in Science and Geography* • Intervention group: in house % points gaps between relative attainment of sub groups pre intervention for previous year January 2014 (Cohort 1) and October 2014 (Cohort 2) • Trend data: in house % points gaps between relative attainment of sub groups for the previous year January 2014 (Cohort 1) and October 2014 (Cohort 2) ***Comparison groups – we do not have funding to recruit comparison groups to the project however if borough data is available or appropriate comparison groups are identified for use by the GLA then comparison data will be evaluated. As discussed with Katie Myhill 25/11/2013.**	• Intervention group: actual pupil attainment levels after Y1 July 2014 (Cohort 1) and Y2 July 2015 (Cohort 2) of intervention • Comparison group: actual pupil attainment levels after Y1 July 2014 (Cohort 1) and Y2 July 2015 (Cohort 2) of intervention* • Intervention group: in house % points gaps between relative performance of sub groups after Y1 July 2014 (Cohort 1) and Y2 July 2015 (Cohort 2) of intervention

	Outcomes	Indicators	Baseline data collection	Impact data collection
School System Outcomes	**School System Outcome 1** • Teachers **involved in intervention** making greater use of networks, other schools and colleagues to improve subject knowledge and teaching practice	• Increased attendance at network meetings • Increased attendance at cluster group meetings • Increased participation in 'online' subject for a/practice networks	• Numbers and profile of teachers attending numbers of network meetings, conferences, taking advanced courses etc. over 12 months previous to the intervention December2013 • Range and scope of online fora pre intervention December 2013 Data collected following CPD1. Hits registered on FSC project page.	• Numbers and profile of teachers attending numbers of network meetings, conferences etc. over Y1 July 2014 (Cohort 1) and Y2 July 2015 (Cohort 2)of the intervention • Level of support for online networks/hits etc. July 2015 Data on use of existing networks (e.g. TES) and new networks now being used collected at CPD2 and hits registered on FSC project page

Appendix 3: Teacher data by school

Teachers directly benefitting, from the programme (counted once during the project)

School	No. participating teachers	NQTs	Teaching 2 – 3 yrs	Teaching 4 yrs +	Disengagement
1.01	3	0	2	1	n/a
1.02	5	1	1	3	1 teacher left the school, 3 teachers lost contact
1.03	2	0	1	1	n/a
1.04	4	4	0	0	n/a
1.05	1	0	1	0	n/a
1.06	3	2	1	0	2 teachers lost contact
1.07	4	2	2	0	School disengaged
1.08	1	0	0	1	n/a
1.09	1	0	0	1	n/a
1.10	3	1	0	2	n/a
1.11	5	3	2	0	1 teacher did not teach year 8, 1 teacher covered staff illness
1.12	1	0	0	1	n/a
1.13	4	0	1	3	3 teachers lost contact
1.14	2	1	0	1	1 teacher lost contact
1.15	2	0	0	2	n/a
1.16	4	1	2	1	1 teacher stopped responding, 1 teacher did not have enough cover
Year 1 totals	**45**	**15**	**13**	**17**	
2.01	5	0	4	1	1 teacher left the school
2.02	2	0	1	1	n/a
2.03	2	1	1	0	1 teacher lost contact
2.04	1	0	0	1	n/a
2.05	2	0	2	0	n/a
2.06	3	0	2	1	n/a
2.07	1	0	0	1	School disengaged
2.08	1	0	0	1	Teacher was ill
2.09	3	0	2	1	2 teachers lost contact
2.10	3	0	1	2	n/a
2.11	1	0	1	0	n/a
2.12	3	1	1	1	2 teachers lost contact
2.13	2	0	1	1	n/a
2.14	1	0	1	0	1 teacher lost contact
Year 2 totals	**30**	**2**	**17**	**11**	
Project Total	**75**	**17**	**30**	**28**	

Appendix 4: Pupil data by school

Schools 1.02, 1.07, 1.12, 1.13, 1.14. 2.07, 2.08, 2.09 and 2.14 did not attend any student sessions. Schools 1.08, 1.09, 1.11, 2.03, 2.10, 2.11 did not provide the requested data.

Tables 6 & 7 – Pupil Sub-Groups benefitting from the programme i.e. participating in the project

	No. pupils	No. Pupils data	No. Male pupils	No. Female pupils	% Lower attaining	% Middle attaining	% Higher attaining	% LAC	% FSM	% FSM last 6 yrs	% EAL	% SEN
1.01	89	89	89	30	-	-	-	1	24	24	14	20
1.03	55	55	20	14	35	60	5	0	35	50	20	60
1.04	110	110	28	18	0	0	100	0	25	25	46	0
1.05	28	28	24	0	1	46	50	0	29	0	46	29
1.06	95	95	109	72	4	33	51	1	24	24	14	20
1.08	128	128	-	-	-	-	-	-	-	-	-	-
1.09	56	56	-	-	-	-	-	-	-	-	-	-
1.10	118	118	118	0	7	38	53	3	33	10	23	14
1.11	115	115	-	-	-	-	-	-	-	-	-	-
1.15	91	91	109	72	1	27	49	1	24	24	14	20
1.16	25	25	30	0	7	25	68	0	10	13	8	22
Year 1 totals	**910**	**527**	**206**	**322**	**4**	**27**	**39**	**1**	**27**	**22**	**20**	**23**
2.01	135	143	76	67	7	79	14	1	22	-	69	32
2.02	73	67	32	28	35	55	11	-	15	-	76	25
2.03	22	-	-	-	-	-	-	-	-	-	-	-
2.04	21	24	10	14	50	50	0	-	38	-	21	21
2.05	18	18	18	0	6	94	0	-	0	-	100	0
2.06	47	23	0	23	9	91	0	0	61	-	4	22
2.10	88	-	-	-	-	-	-	-	-	-	-	-
2.11	56	-	-	-	-	-	-	-	-	-	-	-
2.12	104	75	75	0	13	67	20	0	39	-	59	20
2.13	20	19	19	0	10	74	16	-	21	-	100	16
Year 2 totals	**584**	**369**	**230**	**132**	**16**	**71**	**12**	**0**	**26**	**0**	**64**	**25**
Project Total	**1494**	**896**	**436**	**454**	**22**	**109**	**67**	**2**	**65**	**31**	**92**	**57**

Tables 8 – Pupil Sub-Groups benefitting from the programme i.e. participating in the project

	% Asian Indian	% Asian Pakistani	% Asian Bangladeshi	% Asian Any Other background	% Black Caribbean	% Black African	% Black Any Other Background	% Mixed White & Black Caribbean	% Mixed White & Black African	% Mixed White & Asian	% Mixed Any Other Background	% Chinese	% Any other ethnic group	% White British	% White Irish	% White Traveller of Irish heritage	% White Gypsy/Roma	% White Any Other Background	Refused / Not obtained
1.01	1.0	1.0	0.0	8.3	5.2	41.7	3.1	2.1	2.1	1.0	3.1	0.0	2.1	20.8	1.0	0.0	0.0	6.3	1.0
1.03	0.0	0.0	0.0	1.8	0.0	5.5	3.6	1.8	1.8	0.0	0.0	0.0	0.0	18.2	0.0	0.0	0.0	1.8	65.5
1.04	0.0	0.0	0.9	0.9	0.9	1.8	0.9	0.0	0.0	0.0	1.8	0.9	1.8	6.4	0.0	0.0	0.0	4.5	79.1
1.05	7.7	7.7	7.7	7.7	0.0	11.5	0.0	3.8	7.7	3.8	3.8	3.8	0.0	23.1	0.0	0.0	0.0	3.8	7.7
1.06	0.0	1.0	0.0	4.2	2.1	17.7	7.3	2.1	2.1	0.0	5.2	1.0	0.0	40.6	0.0	0.0	0.0	6.3	10.4
1.08																			100.0
1.09																			100.0
1.10	1.7	1.7	0.0	2.5	17.6	7.6	2.5	3.4	0.0	2.5	5.0	2.5	0.0	20.2	1.7	0.0	0.0	8.4	22.7
1.11																			100.0
1.15	0.9	0.0	1.8	5.4	27.0	6.3	0.0	2.7	0.0	4.5	6.3	1.8	0.0	31.5	0.9	0.0	0.0	10.8	0.0
1.16	0.0	0.0	0.0	3.3	10.0	10.0	3.3	3.3	3.3	3.3	6.7	0.0	6.7	26.7	0.0	0.0	0.0	16.7	6.7
Year 1 totals	**0.6**	**0.6**	**0.5**	**2.8**	**6.6**	**8.9**	**1.8**	**1.5**	**0.8**	**1.2**	**2.8**	**0.8**	**0.6**	**15.8**	**0.4**	**0.0**	**0.0**	**4.9**	**49.3**
2.01	1.4	9.8	2.8	5.6	6.3	15.4	8.4	0.0	0.7	0.7	2.8	0.0	7.0	12.6	0.0	0.0	0.0	23.8	2.8
2.02	1.5	16.4	0.0	11.9	10.4	11.9	0.0	4.5	3.0	3.0	4.5	0.0	1.5	3.0	0.0	0.0	0.0	26.9	1.5
2.03																			100.0
2.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
2.05	16.7	5.6	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	22.2	5.6	0.0	0.0	0.0	0.0	0.0
2.06	0.0	0.0	46.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.2
2.10																			100.0
2.11																			100.0
2.12	0.0	0.0	0.0	2.9	10.6	27.9	1.9	1.0	1.9	0.0	1.9	1.9	0.0	4.8	1.9	0.0	0.0	14.4	28.8
2.13	10.0	5.0	0.0	10.0	5.0	5.0	15.0	0.0	0.0	5.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	5.0	10.0
Year 2 totals	**1.4**	**4.6**	**4.4**	**3.6**	**4.8**	**11.7**	**2.9**	**0.7**	**0.8**	**0.7**	**1.5**	**0.3**	**3.6**	**4.4**	**0.3**	**0.0**	**0.0**	**11.5**	**42.8**
Project Total	**0.9**	**2.2**	**2.0**	**3.1**	**5.9**	**10.0**	**2.2**	**1.2**	**0.8**	**1.0**	**2.3**	**0.7**	**1.8**	**11.4**	**0.4**	**0.0**	**0.0**	**7.4**	**46.8**

Appendix 5: Student Sessions

Schools 1.02, 1.07, 1.12, 1.13, 1.14. 2.07, 2.08, 2.09 and 2.14 did not attend any student sessions.

School	Date of Session	Subjects taught G=Geography B = Biology C = Chemistry P = Physics	Objectives	Number of students attending sessions	Teachers from project	Additional teachers
1.01	18/6/14	B C	Air Pollution in the playground	15	1.01.01	2
1.01	25/6/14	B	Classification of invertebrates	17	1.01.01	2
1.01	4/7/14	G C	Air pollution	28	1.01.03	1
1.01	7/7/14	G C	Air pollution	29	1.01.03	1
1.03	14/7/14	G B C	Air pollution, tourism, invertebrate classification	17	1.03.02 & .01	0
1.03	16/7/14	G B C	Air pollution, tourism, invertebrate classification	17	1.03.01	1
1.03	16/7/14	G B C	Air pollution, tourism, invertebrate classification	21	1.03.02	1
1.04	8/5/14	P	Light & colour, space & heat transfer	21	1.04.02	1
1.04	13/5/14	G	Development and globalisation	24	1.04.04	1
1.04	15/5/14	C	Air pollution, chemical reactions, soil	12	1.04.01	1
1.04	19/5/14	B	Chromatography, soil, food chains	23	1.04.03	1
1.04	20/5/14	G C	Development and globalisation	30	1.04.04	1
1.05	14/5/14	B	Habitat, classification	28	1.05.01	2
1.06	2/6/14	B G	ecosystems	24	1.06.01 & .02	0
1.06	3/6/14	B G	ecosystems	25	1.06.01 & .02	0
1.06	5/6/14	B G	ecosystems	25	1.06.01 & .02	0
1.06	6/6/14	B G	ecosystems	21	1.06.01 & .02	0
1.08	24/6/14	G	Maps, compasses, orienteering	26	1.08.01	1
1.08	26/6/14	G	Maps, compasses, orienteering	20	1.08.01	1
1.08	26/6/14	G	Maps, compasses, orienteering	cancelled	cancelled	cancelled
1.08	4/7/14	G	Maps, compasses, orienteering	28	1.08.01	1
1.08	8/7/14	G	microclimates	26	1.08.01	1
1.08	11/7/14	G	microclimates	28	1.08.01	1
1.09	24/6/14	G	Maps, compasses, orienteering	27	1.09.01	1
1.09	8/7/14	G	microclimates	29	1.09.01	1
1.10	11/6/14	G C	Tourism in Greenwich	29	1.10.02	2
1.10	12/6/14	G C	Tourism in Greenwich	30	1.10.03	1
1.10	17/6/14	G C	Tourism in Greenwich	29	1.10.03	2
1.10	20/6/14	G C	Tourism in Greenwich	30	1.10.02	2
1.11	9/6/14	B	Classification of invertebrates	15	1.11.03	1
1.11	9/6/14	B	Classification of invertebrates	cancelled	cancelled	cancelled
1.11	10/6/14	B	Classification of invertebrates	28	1.11.01	1
1.11	10/6/14	B	Classification of invertebrates	17	1.11.01	1
1.11	13/6/14	B	Classification of invertebrates	27	-	2
1.11	13/6/14	B	Classification of invertebrates	28	-	2
1.15	1/7/14	G B	Geography of crime	20	1.15.02	1
1.15	2/7/14	B	Ecosystems	24	1.15.01	2
1.15	3/7/14	B C	Air pollution	29	1.15.01	1
1.15	15/7/14	G	Geography of crime	18	1.15.02	1
1.15	15/7/14	G	Geography of crime	cancelled	cancelled	cancelled

1.16	23/6/14	B C	Food chains, air pollution	25	1.16.03	1
Year 1 totals	**-**	**62 sessions**		**910 students**	**20 project teachers**	**42 teachers**
2.01	7/5	G B	Urban geog / grassland sampling	21	2.01.01	2
2.01	8/5	G B	Urban geog / grassland sampling	21	2.01.01	2
2.01	15/5	G B	Urban geog / grassland sampling	22	2.01.02	3
2.01	18/5	G B	Urban geog / grassland sampling	25	2.01.04	3
2.01	19/5	G B	Urban geog / grassland sampling	22	2.01.01	2
2.01	20/5	G B	Urban geog / grassland sampling	24	2.01.03	3
2.02	24/3/15	B C	ponds	27	2.02.02	0
2.02	7/7	G	Urban geography	18	2.02.01	1
2.02	8/7	G	Urban geography	14	2.02.01	1
2.02	9/7	G	Urban geography	14	2.02.01	1
2.03	27/4/15	G	Air pollution / urban geography	22	2.03.01	1
2.04	21/5	G	Urban regeneration	21	2.04.01	2
2.05	22/4/15	G	Climate study / urban geography	18	2.05.01	1
2.06	22/5	B	Classification & sampling	24	2.06.02	0
2.06	22/5	B	Classification & sampling	23	2.06.03	0
2.10	14/5	B P C	Air pollution / materials	cancelled	cancelled	cancelled
2.10	22/5	B P C	Air pollution / materials	cancelled	cancelled	cancelled
2.10	2/6	B P C	Air pollution / materials	22	2.10.01	2
2.10	4/6	B P C	Air pollution / materials	19	2.10.03	1
2.10	11/6	B P C	Air pollution / materials	19	2.10.01	2
2.10	16/6	B P C	Air pollution / ponds	20	2.10.02	1
2.10	18/6	B P C	Air pollution / ponds	8	2.10.01	1
2.11	15/6	G	Urban geog	28	2.11.01	1
2.11	15/6	G	Urban geog	28	-	2
2.12	5/6	B	Grassland / inverts	17	2.12.01	1
2.12	5/6	B	Grassland / inverts	18	-	3
2.12	12/6	B	Grassland / inverts	24	2.12.01	2
2.12	30/6	B	Grassland / inverts	21	2.12.01	2
2.12	3/7	B	Grassland / inverts	24	2.12.01	2
2.13	2/7	G	Urban geog, climate, lichens, soil (f/w techq)	20	2.13.01	2
Year 2 totals	**-**	**51 sessions**	**-**	**584 students**	**16 project teachers**	**44 teachers**
Project Total	**-**	**113 sessions**	**-**	**1,494 students**		**86 teachers**

Appendix 6: References

David Lambert and Michael Reiss, Institute of Education, The place of fieldwork in geography and science qualifications, May 2014 http://research.ioe.ac.uk/portal/en/publications/the-place-of-fieldwork-in-geography-and-science-qualifications%286b994c4e-6495-43ad-aa80-d5b94546763f%29.html

House of Commons Science and Technology Committee 'Practical experiments in school science lessons and science field trips' (Ninth Report of Session 2010-12).

English Outdoor Council, 2015, High Quality Outdoor Learning, http://www.englishoutdoorcouncil.org/publications

Ofsted, 2008, Learning Outside the Classroom: How far should you go? http://dera.ioe.ac.uk/9253/

https://www.gov.uk/government/collections/national-curriculum

Department for Educatio, 2011 https://www.gov.uk/government/publications/class-size-and-education-in-england-evidence-report

Appendix 7: Teacher Sense of Self Efficacy Survey

Teacher sense of self efficacy survey

Directions: Please answer the questions below with regard to your teaching in the particular subject that this London Schools Excellence Fund programme is addressing. For each statement, please indicate your opinion of your ability. You will be asked to complete this survey again at a later date.

	How much can you do?								
	Nothing		Very little		Some influence		Quite a bit		A great deal
1. How much can you do to get through to the most difficult students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2. How much can you do to help your students think critically?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
3. How much can you do to motivate students who show low interest in school work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
4. How much can you do to get students to believe they can do well in school work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
5. How well can you respond to difficult questions from your students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6. How much can you do to help your students value learning?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7. How much can you gauge student comprehension of what you have taught?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
8. To what extent can you craft good questions for your students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
9. How much can you do to foster student creativity?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
10. How much can you do to improve the understanding of a student who is failing?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
11. How much can you do to adjust your lessons to the proper level for individual students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
12. How much can you use a variety of assessment strategies?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
13. To what extent can you provide an alternative explanation or example when students are confused?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
14. How much can you assist families in helping their children do well in school?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
15. How well can you implement alternative strategies in your classroom?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
16. How well can you provide appropriate challenges for very capable students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Appendix 8: Project Teacher – Focus Group Questions Feedback and Evaluation (email)

Please answer the following questions about your experience on, and as a result of taking part in, the Field Studies Council 'Inspiring Learning' project. It should take about 10 minutes to complete.

1. How has you confidence ***changed*** in leading learning outside the classroom e.g. in the school grounds, local parks or other out-of-school places as a result of being part of the 'Inspiring Learning' project?

2. List and describe any school outdoor / out-of-classroom learning you have led since your 'Inspire Learning' CPD & Student Sessions. Please indicate whether these are 'new' learning opportunities which you were not running beforehand.

3. List and describe any new outdoor / out-of-classroom learning resources you have created since being through your 'Inspire Learning' CPD.

4. List and describe any Field Studies Council resources or learning activities you have used since your 'Inspire Learning' CPD.

5. If you were to recommend the 'Inspire Learning' project to another teacher, what would you say to them about the project or CPD experience?

6. If you have any other comments about the 'Inspire Learning' project, please write them here.

Thank you very much indeed for taking the time to complete this project feedback and evaluation.

Appendix 9: Evaluation Protocol for Field Visit Observations

Introduction – carrying out the observations

The aim of the field visit observations is to gather evidence for impacts of the LSEF CPD intervention on learning outcomes for teachers and their students. After the FSC-led CPD sessions for teachers, each school can book up to six field visits, led by an FSC tutor, in which teachers lead certain activities during the session. The focus of the project is on improving teacher specialist subject knowledge for leading outdoor learning in local environments. This then may impact on the students' learning progress. In addition, there may be other affective and social impacts for students, especially if they do not regularly have these kinds of experience.

To record evidence of impact, make field notes as directly as possible during the observation using the following guidelines. Act as a 'non-participant observer' where possible (in other words, do not intervene to give students instructions, answers etc). You might, however, ask teachers and students a few questions about what they are doing / seeing etc.

In terms of recording observation field notes, it is possible to set out a format with each of the foci below as sub-headings. The other way to make notes is simply using a timeline – who said / did what when, and then later on to group the actions and statements according to categories below. (I've tried both and I prefer the timeline of field notes method!).

Try to capture a balanced range of field notes, positive and negative, on impacts. It is impossible to capture everything; six good examples are better than 20 sketchy examples. The field notes need some interpretation afterwards. This might be achieved through:

- comparison with received CPD sessions in which specific subject knowledge was covered (Sophie can advise on this);
- cross-checking with teacher and student written questionnaires (both from CPD sessions and those completed at the start and end of the observed sessions);
- responses to follow up questions in future focus groups with teachers.

Suggested foci for observations of teachers and students during outdoor learning now follow.

Teacher-focused observation

During each activity in which the teacher leads the learning, note:

- examples of questioning dialogue eg closed questions requiring often one specific answer 'what is that'? and more open questions eg 'why is that happening?';
- examples of asking series of linked questions which progressively deepen students' understanding eg 'how do plants make their food?' 'is photosynthesis biological or chemical?' 'explain what is actually happening during photosynthesis';
- examples of responses to students' questions about ideas / observations (are responses appropriate, evaluating accurate / inaccurate ideas, supporting progress with misconceptions, supporting progress generally?);
- links being made to the school curriculum / topic etc;
- anything else said or done which promotes students' learning in the outdoor environment eg spontaneously drawing attention to an interesting / unusual 'artefact'; encouraging engagement and participation.

Note: there will usually be more than one teacher present. Focus should be on the lead teacher who received the CPD training. Then, if the other teacher(s) are science / geography teachers, some notes on their actions and competence would also be useful to support evidence for the cascading of the training to other school colleagues.

During each activity in which the FSC tutor leads the learning, note:

- examples of what the supporting teacher(s) are doing / saying (as above)

Student-focused observations

During each activity led by the lead teacher, note:

- examples of students' answers to teacher questions (including any misconceptions or alternative ideas being expressed then do students make progress towards scientific ideas?);
- examples of questions asked by students;
- general engagement, participation, interest levels;
- anything interesting / unusual that a student does / says linked to an activity;
- any links made to the school curriculum / topic etc
- what students do / say in breaks and lunch (if possible) which has relevance to the experience.

Note: to make meaningful observations possible, focus on specific small groups of students rather than the whole group. This may be governed by which group the lead teacher is working with at a given time. Change groups sometimes, no need to follow the same group the whole time, the main focus is on the teacher.

It is also possible to make these notes on students during sessions led by the FSC tutor.