

Final report for UKRI / RCUK Strategic Support to Expedite Embedding of Public Engagement with Research project: Supporting staff in Public Engagement with Research at the STFC National Laboratories

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1. Executive Summary

The Strategic Support to Expedite Embedding of Public Engagement with Research (SEE-PER) project has allowed the STFC Public Engagement team to investigate and develop the provision of training for public engagement with research (PER) for staff at the STFC National Laboratories, in the context of the broader package of support for staff to participate in the PER programme. The learning from the project – which took place in a different context (a research institute as opposed to a university) from previously reported work – adds to the body of knowledge of the Public Engagement with Research community.

The challenge addressed by this project was: *Enhancing the take up of training and CPD for PER, and the quality of provision? What are the barriers which lead to low uptake of training and CPD in PER, and how might these be addressed?*

Through a series of staff consultation exercises, the barriers leading to low uptake of training in PER – and, more broadly, the barriers to participating in PER at all – were investigated. Identified barriers were similar to those reported in the literature: primarily a lack of time to participate, a lack of management support to participate, a lack of reward and recognition for participation, and a lack of staff confidence.

Public Engagement is a part of STFC's Royal Charter, and "Inspire and Involve" is one of the six strategic themes set out in the corporate strategy, however, as commented by one staff member "*project delivery always trumps outreach*". Multiple solutions were proposed, but the one which was investigated most thoroughly was presenting public engagement research not only as a core part of STFC's role, but also as a key opportunity for professional development.

To that end, a new set of PER training activities were developed, as well as an update of existing training. These address the identified outcomes for staff of training, and outcomes for staff of participating in PER activity. Uptake has been excellent, with over 550 staff participating. The outcomes of training are long-term (and long-term evaluation plans are in place), but preliminary evaluation – in terms of staff satisfaction and the outcomes of subsequent PER activities is averaging 4 or more out of 5. As a result of this work, PER training has been formally embedded into two of STFC's training schemes, which provides an excellent precedent for further embedding.

The PER training of STFC staff, and the contribution of STFC staff to the PER programme, now also feed into two new performance indicators, used to set targets and measure progress against the STFC Public Engagement strategy. This heightened visibility, and accountability, demonstrates STFC's commitment to public engagement as a professional development opportunity, and addresses the challenge of uptake of PER training directly.

2. Introduction

In order to strengthen the embedded culture of Public Engagement (PE) within the Science and Technology Facilities Council (STFC) National Laboratories, this project addressed the "PER (Public Engagement with Research) Challenge" aspect of the Strategic Support to Expedite Embedding of Public Engagement with Research (SEE-PER) project, focussing on the challenge of

Enhancing the take up of training and CPD for PER, and the quality of provision.

In particular, the call asked: *What are the barriers which lead to low uptake of training and CPD in PER, and how might these be addressed?*

The project objectives were (and are):

1. To involve staff in a consultation on the support available for PE, with a focus on training and professional development, leading to recommendations for embedding our findings throughout STFC.
2. To draw on the staff consultation findings to produce an evidence briefing for dissemination across the community, focussing particularly on the uptake of training for PER by staff at the National Laboratories, thus helping to address the lack of available evidence for Research Institutes noted in the report "[The State of Play: Public Engagement with Research in UK Universities](#)".
3. To involve staff in the creation of a new staff support package including professional development.
4. To begin the process of embedding the new staff support and professional development package across the National Laboratories.

In the objectives, and throughout the SEE-PER project, we typically use the term "staff", as opposed to "researcher" (which is used more widely in the literature), to indicate that the project also involves STFC's technicians, apprentices etc.

STFC is committed to PER – there are many opportunities for the public to engage with the labs. The success of these programmes is dependent on the STFC staff based at the National Laboratories.

Not only do the programmes rely on the time and goodwill of staff volunteering to help with activities from a practical point of view, but the skill with which staff engage the public is often the biggest factor in the success of the activity. Consequently, in order to achieve our STFC's vision of "a society that values and participates in scientific endeavour", the skill of our staff is a critical part of our mission "to use our **stories, community and facilities** as the basis of world-class public engagement that inspires and involves people with our science and technology". (STFC's Public Engagement vision, mission and aims are detailed in the [STFC Public Engagement Strategy](#).)

The SEE-PER project, by studying the challenges faced by staff in participating in good quality PER, allowed these challenges to be addressed. Focussing on professional development in public engagement had the objective of increasing the skills of National Laboratories staff, with a consequent improvement in the outcomes of the PE programme as a whole – thus directly contributing to achieving STFC's aims and objectives.

The project also directly addressed one of the challenges facing the PE sector identified in the [State of Play](#) report: that of the take up of training and CPD for PER, and the quality of provision. In particular, the report identified a lack of evidence from research institutes (as opposed to universities). By investigating this challenge within the STFC National Laboratories – which are more akin to a research institute – the SEE-PER project addressed this gap.

In order to achieve its objectives, the SEE-PER project consisted of three phases: an information gathering exercise – asking staff to consider what challenges they faced in order to participate in good quality public engagement with research. The understanding gained from this phase fed into the second phase of the project – piloting different training for public engagement with research. The third phase of the project was to begin the process of embedding this training, and other support for staff participating in public engagement.

As described in the [STFC Public Engagement Evaluation Framework](#), within the STFC public engagement programmes an iterative process of “Plan, Do, Review” is followed. The phases of the SEE-PER project mean that several cycles of this process were completed, with the “review” of one phase feeding into the “plan” of the next. This also means that the inputs, outputs and outcomes described below are not entirely ‘chronological’ – i.e. outcomes of the first phase are inputs and outputs of the second phase etc. Our understanding of the extent to which this is the case evolved over the course of the project – the phases (and thus inputs / outputs / outcomes) do not always have hard boundaries between them and do not follow one from the other, with one phase finishing and the next beginning.

3. Project inputs

The SEE-PER project required significant resource: existing knowledge, staff time and external expertise. The creativity and enthusiasm of the National Laboratories staff generated more ideas and suggestions than expected – a welcome outcome, but one which meant that more opportunities needed to be explored.

3.1 Staff time and goodwill

Being a part of the SEE-PER project allowed the dedication (and funding) of time to consider how best to support staff to participate in public engagement with research, and in particular what challenges exist around the issue of training staff to enable them to conduct good quality activities. It allowed staff to participate in focus groups and other activities – something that was particularly important in order to include the views of those staff whose time is more strictly allocated, who typically find it harder to participate in PER activities.

In addition to staff time, probably the most crucial input to the SEE-PER project has been the goodwill and enthusiasm of the National Laboratories staff. Staff support for the PER programme is recorded: in 2017-18, over 500 staff participated in the PE programme (nearly a third of staff employed in the National Laboratories). Staff enjoy participating in public engagement, and see it as important, as exemplified by the quote below, taken from the staff consultation:

I consider public engagement both a necessity and a duty for an STFC scientist. A necessity, because public support and trust in scientific research are key to both keeping it alive and to fostering the development of future talent; and a duty, because STFC research is funded by the taxpayer, and I believe openness and accountability, not just in form but in fact, should therefore be key to our work.

Over the course of the SEE-PER project, staff have proved willing not only to participate in PER itself, but also to consider it more strategically. Many staff at the National Laboratories have a genuine desire for ‘ownership’ of the PER programme. Some, of course, want no more than to take part – essentially to do as directed by the PER team, but many want to develop their own PER skills – and to develop STFC’s PER programme. They have thought critically about, in effect, the culture of public engagement with research within STFC, and supported its development. Without this goodwill, the SEE-PER project would not have been possible.

3.2 Prior learning

The main piece of learning that STFC’s SEE-PER project was based on was the [State of Play: Public Engagement with Research in UK Universities](#) report. This formed the backdrop to the project and laid out the challenges encountered when embedding PER into research institutions – and in particular, detailed the challenge addressed by the STFC project, that of the take-up and quality of continuing professional development for PER.

The SEE-PER logic model (Figure 1) and evaluation framework, co-created at the first coordination meeting in November 2017, also helped inform the development of the SEE-PER project at STFC.

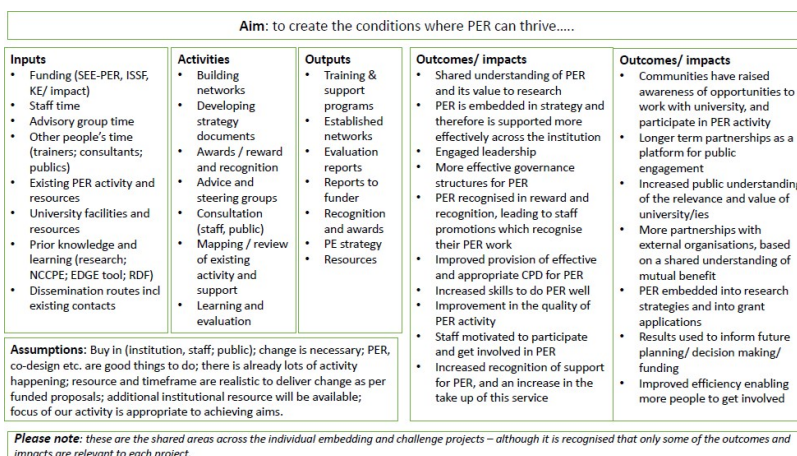


Figure 1 The SEE-PER logic model, co-created at the first project coordination meeting

Several other STFC PE projects have informed the SEE-PER project. The STFC ‘STEM learning’ project is ongoing work with teachers to determine how best STFC can support STEM learning in formal education – this involves focus groups with teachers (the format and running of which informed the development of focus group sessions with staff), and also highlighting areas of the curriculum linked

to STFC (which will inform future resources / training for staff on curriculum knowledge). In addition, there is an ongoing project to support early career researchers to participate in public engagement with research: the [PEER \(Public Engagement Early-career Researcher\) forum](#). The [STFC Public Engagement Evaluation Framework](#), and STFC’s ongoing work to review and develop evaluation procedures, is an important input, providing the necessary tools to evaluate the project.

3.3 External expertise

Time and input from people outside of STFC have also played a part in the SEE-PER project. In addition to STFC’s Advisory Panel for Public Engagement (APPE), input from the other SEE-PER projects and the National Centre for Coordinating Public Engagement (NCCPE), in developing the logic model and framework for the SEE-PER project, has been used. An early meeting with SEE-PER members focussing on the same challenge as STFC, that of training, also helped to refine the project plan, particularly when designing the focus groups and considering the various types of training, including the importance of recording when training has been undertaken.

3.4 Existing PE resources

The National Laboratories PE programmes are well established, reaching over 30,000 people each year, and provide a wide variety of opportunities for staff to be involved. There are tested and developed resources which link to STFC research for a wide variety of participants and situations – from young children to educators. In addition, since the publication of the [Public Engagement Evaluation Framework](#), the National Laboratories have been collecting evaluation data on their programmes – providing a baseline for future comparisons. As highlighted in Section 3.1, staff support for the PE programme is recorded, and in 2017/18 over 500 staff members participated. More detailed information, including demographic data (by gender, department and seniority) is available for RAL – where 374 staff members were active in 2017/18. Figure 5 shows the support of staff as a function of seniority - as can be seen, early career staff (band N and C) are less likely to supervise a work experience student, and more senior staff are less likely to participate in an event.

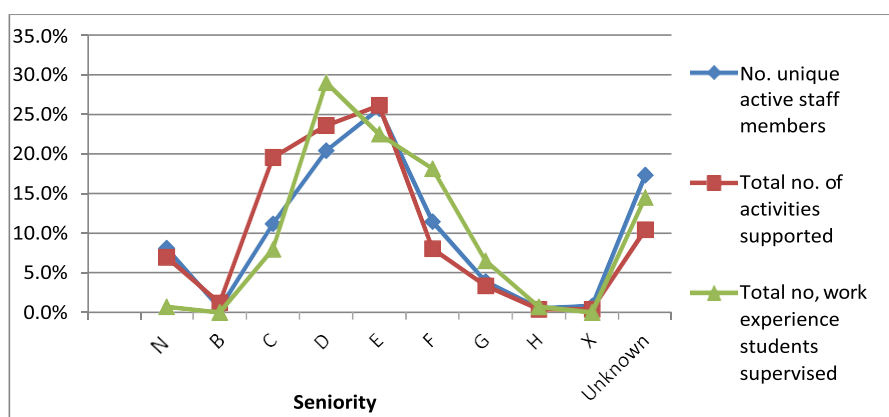


Figure 5 Percentage of staff supporting the PE programme at RAL in 2017/18 as a function of seniority (N being least senior).

The differences between departments that was seen in the results of the Athena Swan survey are repeated in this data, as can be seen in Figure 6, and were an important input.

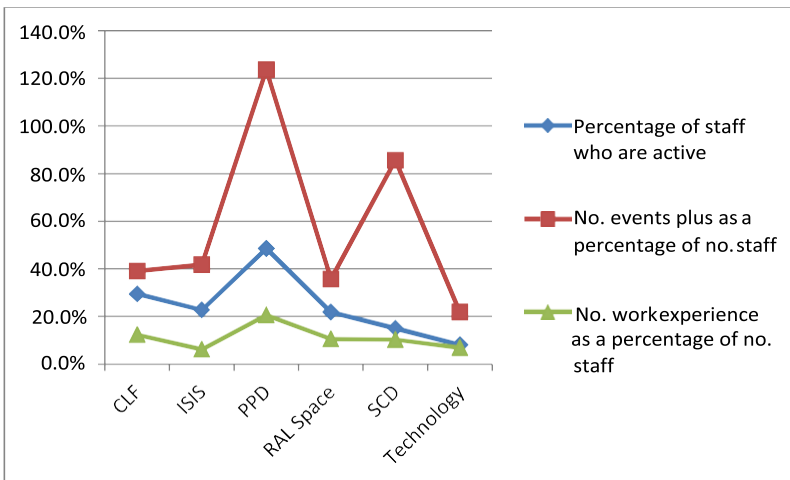


Figure 6 Percentage of staff supporting the PE programme at RAL in 2017/18 by department

4 Assumptions and context

The STFC SEE-PER project was designed and developed within the context of the STFC National Laboratories. The Science and Technology Facilities Council (STFC) is one of the seven government research councils. STFC is responsible for funding research into particle physics, nuclear physics, for the UK’s contribution to international projects such as CERN, and for running large experimental facilities – the National Laboratories. There are 1732 staff members in the National Laboratories Directorate, and they work alongside colleagues in other Directorates including Programmes; Business & Innovation etc. The SEE-PER project focussed on staff within the National Laboratories – however, particularly ‘on the ground’ at the labs, there is no hard border between staff in different areas. Although the majority of staff involved with Public Engagement are from the National Laboratories, staff from across STFC contribute as well.

Since its founding, PE has been a core part of STFC’s role – it is a part of the [Royal Charter](#) to generate public awareness and encourage public engagement. To “inspire and involve” is one of the six strategic themes detailed in STFC’s [corporate strategy](#). Consequently, a key assumption for the SEE-PER project is that PE is regarded as a ‘good thing’ at all levels of the organisation. The context in which the SEE-PER project took place was in an organisation where PE is already embedded into the strategy – and the assumption that improving support for staff taking part in PE would be seen as a positive step.

STFC’s current [public engagement strategy](#) was published in 2016. One of the five aims given in the strategy is “Developing and supporting STEM influencers” – this includes not only teachers but also STFC staff. It is with the context of this strategy, which was agreed and approved by STFC’s Executive Board, that the SEE-PER project has taken place.

STFC – and the National Laboratories in particular – are a complex organisation. The National Laboratories operate five sites in the UK. These include Daresbury Laboratory, Rutherford Appleton Laboratory (RAL), the UK Astronomy Technology Centre (UK ATC), Chilbolton Observatory and Boulby Underground Laboratory.

The three largest National Laboratories each have a dedicated PE team, who form the National Laboratories Public Engagement group (NLPE). These teams run PE programmes at each site, engaging with over 30,000 teachers, school students and members of the public each year. There are also other embedded staff members, outside of this central team, who have some level of responsibility for PER for individual departments within the labs.

Within the National Laboratories, there are eight departments, each with its own scientists, engineers, technicians and support staff. Each department has a unique structure, and a unique approach to public engagement with research. Significantly, each department also records and accounts for staff time in different ways – which has an effect on how easy it is for staff to devote time to PE. Two departments (ISIS and RAL Space) have dedicated staff focussing on PER and Communications and their own PE strategies; two departments (Scientific Computing and the Hartree Centre) have a combined Public Engagement Committee, which sets their PE strategy; two departments have staff who have responsibility for PE in addition to their STEM role; and the final department has no central contact for PE.

The SEE-PER project was designed around this structure, and with the understanding of the different needs – and different aims – of each group within STFC. The project design was also mindful of the fact that, unlike universities, there is not a large student population, although there are apprentices, a graduate programme, and a sandwich student scheme and certain parallels can be drawn between these groups. Focus groups and training were designed such that each group were given the chance to input fully.

STFC has undergone significant changes over the course of the SEE-PER project, and is now a part of UK Research and Innovation (UKRI) – a change which took place on 1 April 2019. The process of transformation is an ongoing one, and has particularly affected central functions.

STFC's Executive Chair (formally Chief Executive) also changed over the course of the SEE-PER project, with accompanying changes in priorities and reporting. Indeed, only one 'original' member of STFC's Executive Board has remained in place since the start of the SEE-PER project. Most recently, the announcement was made that the National Laboratories will be splitting into two new directorates. These organisational changes, and changes to the senior management team, have affected the SEE-PER project in terms of reporting and obtaining senior-management buy-in.

5 Activities / Outputs

The activities and outputs of the SEE-PER project have been broadly in line with those planned, but more focussed on training opportunities – to investigate and develop as appropriate the broad range of suggestions and ideas that resulted from the staff consultations. There is significant appetite for

this at the National Laboratories (all training has run at over 85% capacity), but this refocussing was also driven by changes to the STFC context (detailed in the previous section) – which made it wise to make reports and recommendations available to the new senior management structure, after the changes had been put in place.

5.1 Facilitation training for the Public Engagement team

As part of the SEE-PER project, ten members of the Public Engagement team attended facilitation training, run by external providers over the course of an afternoon and a morning. This training gave the Public Engagement team a solid grounding in the theory and practise of running facilitation sessions, and was used throughout the SEE-PER project activities when designing, developing and running focus groups and other workshops.

5.2 Existing training review

At the start of the SEE-PER project, a review of the training opportunities for staff interested in public engagement with research was conducted. Most training for STFC staff members was ‘ad-hoc’ and tended to be arranged reactively on a one-to-one basis with the PE team, by the staff member in question. Staff would request help with a particular activity – for instance, a staff member would have volunteered to go into a local school – and would go over the activity with a member of the public engagement team. This one-to-one training was not recorded – and hence was not recognised as professional development. For certain activities (with particular health and safety risks), slightly more formalised training was specified as part of the risk assessment for that activity, and records kept of those who completed the training.

Briefings and training particular to specific events were also offered – ranging from simply showing volunteers the best routes around site, to safety issues such as emergency procedures, to activities and engagement. Training for work experience supervisors (with a particular focus on health and safety and safeguarding matters) was run annually. STEM Ambassador inductions were hosted at the National Lab sites, run by local STEM Ambassador Hubs, and networking sessions were held on a roughly biannual basis.

5.3 Staff consultation

A series of focus groups were run with staff from a range of departments, seniority and experience of public engagement with research. 75 staff attended. The focus groups covered four areas: after an introduction, staff were asked to consider the challenges they encounter to participate in good quality public engagement with research. This was followed by a discussion of potential solutions to these challenges, before focussing on training as a key part of support staff in PER.

A focus group session plan, including timings, set-up, resources etc. was produced for this project, and will be used for future focus groups at the National Laboratories. Section 9.1 contains more details of the focus groups.

A number of staff (five) couldn’t attend the focus group sessions, but still wanted to input into the process and so provided input via alternate methods – answering a ‘questionnaire’, one-to-one conversations or providing free-form feedback via email. Some also provided further input via email

after attending a focus group. In addition, the results of an e-survey (answered by 133 staff), conducted by one department focussing on the public engagement and communications activities of that department, were considered.

The results of this information gathering were written up as an internal report. In addition to this, a training development plan – with a prioritised list of training content and formats (including useful inputs) – was written to ensure the measured and logical programme of developing, trialling and embedding training for staff.

5.4 Networking sessions

Four informal networking sessions provided a good opportunity both to consult with staffs, and to provide training and support. (These sessions were attended by at least 80, 77, 73 and 10 staff members, although some staff attended multiple sessions.) The networking sessions include refreshments, and were run as drop-in events (hence the uncertainty in numbers, with staff arriving throughout the event), where the public engagement team were available throughout the day with a wide variety of resources.

During the networking, in addition to the discussions between staff members, the PE team ran impromptu familiarisation / training sessions around particular ideas or resources. The primary purpose of these sessions is to allow staff to practise using the resources (e.g. to practise making model comets) – which was one of the suggestions from the focus groups: giving staff the chance to build their confidence in a supportive environment.

Staff were also directed to flipcharts asking “What are the challenges when engaging with schools and the public? And how can we help?” and “What training would be helpful when engaging with schools and the public?” – examples can be seen in Figure 7.

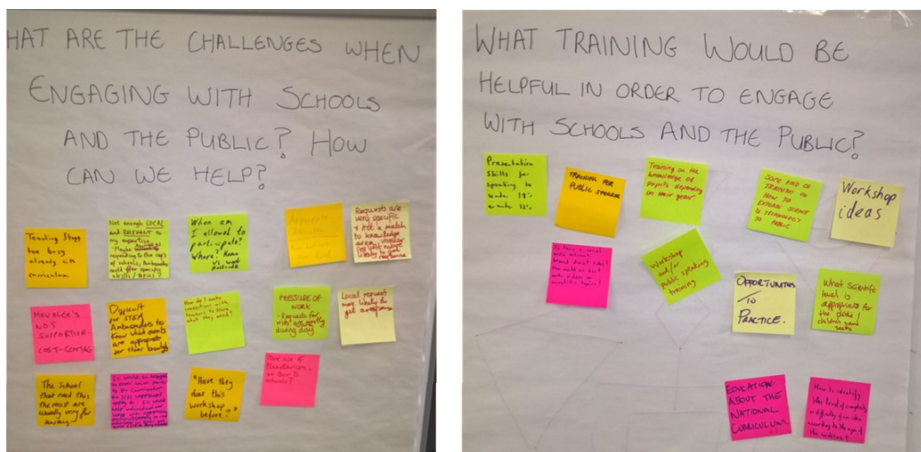


Figure 7 Flipcharts from a staff networking session asking about challenges, solutions and training.

The networking sessions were also used to generate sign-ups for training focussing on some of the resources, and to discuss training formats.

5.5 Advisory Panel session

STFC's Advisory Panel for Public Engagement (APPE) is a valuable 'critical friend' when evaluating and discussing the development of the STFC public engagement programme. A session was run at the APPE meeting in April 2018 focusing on the SEE- PER project and a linked, parallel project, investigating how best to support early career researchers to participate in PER across the STFC community. APPE members were split into groups and asked to consider one of four topics: Rewarding and recognising good public engagement, Getting support from managers for researchers to do public engagement, Develop good leadership in public engagement and Develop peer support and networking in public engagement.

Following the general principles used in the staff focus groups, APPE members were initially asked to consider what makes these four topics challenging, and then to consider "What can STFC do?" to address the challenges. Some example outputs can be seen in Figure 8.

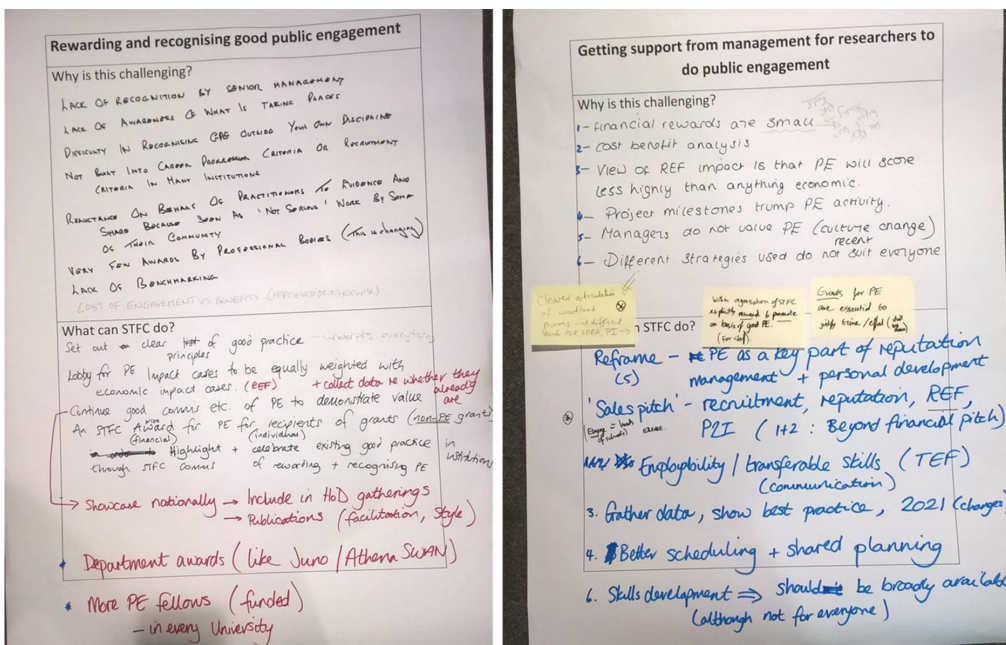


Figure 8 Outputs from APPE session focussing on how to support staff in the National Laboratories and early career researchers.

5.6 Online training

One of the challenges raised during the focus groups was uncertainty over some of the practicalities of public engagement with research – as expected, a lack of time was frequently mentioned, but issues such as insurance, travel and subsistence, and safeguarding were also raised.

An online interactive safeguarding training module was created, and is now a part of STFC's internal online training platform. The training takes staff members through the practicalities of STFC's safeguarding policy, and how to implement it in practice. All staff are recommended to complete

the training, and it is mandatory for specific groups of staff, including work experience supervisors. To date, 224 staff have completed this training, and it is scheduled for review in March 2019.

In addition, STFC's intranet pages on the PE programme have been updated, and new information about some of these issues – e.g. insurance – has been included. This gives staff accessible central information about the practicalities of volunteering as part of the PE programme. It is not, however, a complete set of information – primarily because certain procedures are different for different departments. At the next networking session (scheduled for February 2019), one of the questions asked to staff will be how useful these intranet pages are, and how they can be further improved.

5.7 External training

External training providers can give a different perspective, and bring new expertise to the National Laboratories staff. Externally recognised accreditation for training was not seen as a big advantage – they were more concerned that the training was recognised internally, by line management and as part of the appraisal process. This is in contrast to the findings reported by some of other SEE-PER partners, and it could be due to the fact that STFC staff are less likely to move institutions as frequently as academics.

The lab sites have hosted STEM Ambassador induction sessions for several years, enabling staff members to become a part of the national scheme. The induction process has changed during the course of the SEE-PER project (now including an on-line induction option), but in-person Ambassador induction sessions continue to be held on site and now include a brief introduction to the Lab PE programme, the resources, support and training available and mention of our work on inclusion. 52 staff members have attended the training since the start of the SEE-PER project, just under half of whom (23) attended the training with the introduction to the PE programme.

Diversity and inclusion training was raised during the staff consultations. This is an area which many STEM Ambassadors feel passionately about. It is also an area where staff feel significant uncertainty – they are worried about inadvertently discouraging young people. A great deal of research exists about representation within STEM, particularly with regards to gender, and there are published resources available in addition to internal work conducted by STFC. In partnership with the local STEM Learning provider, “[People Like Me](#)” session was held at RAL, attended by 15 Ambassadors. Pre and post evaluation was gathered (via e-surveys), and further (long-term) evaluation is planned, with the intention of producing a case study. Results indicate that the training was well received (with an average score of 4.2/5), and nearly 80% of participants said that it encouraged them to remain involved (or to increase their involvement) with the STEM Ambassador programme. The most popular aims prior to the training were to gain new skills, activities or tools to use when engaging with children and young people, and to feel better prepared when working with groups of girls to increase and support their STEM aspirations, but (in apparent contradiction to the overall training score) up to a third of participants “neither agreed nor disagreed” that this aim was met.

5.8 Resource training workshops

A series of short training workshops, in a variety of formats, are now in place. These workshops are based around specific resources and all include a set of elements based on the outputs of the focus

groups and other information gathering. These elements are the same for whichever resource, activity or demonstration the training focuses on:

- **Outcomes:** what is the purpose of the activity or demonstration? This draws on the language used in the PE Evaluation Framework, of generic learning outcomes (GLOs), and includes outcomes for both the audience and the staff member running the activity.
- **Practicalities:** what is the link to STFC, and how is the resource used?
- **Health and safety:** what are the key safety considerations for the particular resource? The risk assessment(s) for the resource is distributed.
- **Levels:** What is the right level for different audiences? Different explanations work for different levels of science capital
- **Common questions:** Staff are often reluctant to engage with the public in areas which are not their exact specialism, for fear of being asked a question they don't know how to answer. In addition to covering common questions and their answers, this element includes an emphasis of the fact that it's perfectly acceptable not to know the answer to every question, and a discussion of the positive aspects of allowing the public to see that scientists and engineers are not 'all-knowing'.
- **Practise:** The opportunity to practise was raised at several of the focus groups, as a way to build confidence. The training workshops end with a more informal opportunity for staff to practise the activities and to check the STFC links etc. – particularly the links to their own areas of work.

14 staff members have attended these sessions so far. They were well received, but the majority of staff still requested the opportunity to act as an assistant before leading the activities for themselves – and consequently, upcoming opportunities to assist with the resource are flagged in the training session. One staff member has subsequently assisted and then led an activity successfully – and confirmed that the opportunity to assist before leading was valuable.

As with all training, the trainer needs to combine the flexibility to adapt to the staff participants' experience, specialisms and preferences whilst consistently providing them with the resources they need to run an activity successfully. External trainers can provide new insights and opportunities, but a good relationship with staff enables the training to run more smoothly, so it can be helpful for the PE team (known to the staff) to facilitate sessions with in partnership with external speakers.

5.9 Longer-term training

Computing activities were highlighted in networking sessions as a type of activity where it was particularly important for staff to be confident in their ability to lead or support a workshop. A small pilot training session was run with three staff members, in advance of a school event. The staff all engaged well at the school event, with excellent feedback – the surveyed teachers gave an average rating of 4.9/5. The "Help provided by staff helpers" was also rated as 4.9/5. The staff did, however, feel that further training – in particular the opportunity for more practise – would have been useful.

In parallel with this pilot training and event, the PE team and Scientific Computing Department worked on co-designing longer-term training for staff, in order to build staff confidence in the

activities and widen the available pool of volunteers to support and lead the existing computing activities, and to develop and trial future PER. The training was designed as a series of six lunchtime sessions: the first two sessions would be more structured – including the outcomes, practicalities, and safety elements of the activities. The final four would be more informal, and would give the participants the chance to practise and explore the activities for themselves, with support from other staff members. These final sessions would cover the other elements detailed in Section 5.8: levels, common questions and practise.

An e-survey was developed to gauge interest in these longer series of training workshops, which was completed by 53 members of staff. They were asked whether they would be interested in leading, supporting and/or attending training sessions on a variety of different computing topics (Arduinos, Mindstorms, Python etc.). 11 staff members indicated they were willing to lead training sessions on particular topics, 32 respondents were willing to support at least one of the training sessions, and 49 staff members indicated they would like to attend training sessions on at least one topic.

Dates have been fixed to initiate this training, starting in January, and a programme has been agreed. We will also be using this to trial remote training – linking two sites via video conference, with the training session being led by one site.

5.10 Reactive training

As identified in the review of existing training at the National Laboratories, reactive training – arranged by staff members on a one-to-one basis with the public engagement team, normally with a short term objective focussed around a particular event or activity – was a common form of training. Although proactive training (arranged by the public engagement team with a longer-term objective) is typically more efficient (as it reaches more people), there will always be a need to react to staff needs. The approach to the training, though, has been adapted as a result of the staff consultations, to include (where appropriate) the points set out in Section 5.8, and in particular to help staff to consider the outcomes of the PER activity in question for themselves.

5.11 Graduate and apprentice scheme

Working with the graduate and apprentice schemes, a team work experience event was piloted in July 2018, the Engineering Experience Week (EEW). The 14 staff members who supported the project were all early career staff. GLOs for the EEW included outcomes both for the students and also, explicitly, for the staff members – the first time this was included. This explicit focus on staff development was the result of discussions with the graduate / apprentice schemes and the staff consultation sessions.

The EEW also included recognition for the staff members – a celebration event was held, attended by their line managers (13 attended) and a National Laboratories Director, and certificates presented to the staff involved. This recognition from management was an important part of the planning for the EEW. More detail of the event, including a photo of the staff members at the celebration, is in Section 9.2

Following the successful piloting of the EEW, PER is now embedded as an official part of STFC's graduate scheme, and the apprentice scheme has approved future EEW's as a professional development opportunity for all apprentices. PE training was run for the 2018 graduates as part of their induction (46 graduates were engaged). This session included an introduction to the NLPE programme (similar to that given as part of the Ambassador induction sessions), and an opportunity to explore some of the PE resources (as in the networking sessions, Section 5.4).

In addition to this, however, a range of PE projects were introduced to the 2018 graduates during their induction: one of these projects is the 2019 EEW, but a range of other projects were also presented. Working on a project has been a significant part of the graduate scheme for several years – previous projects have included activities such as arranging a conference. The projects presented during this session were designed both to meet the aims set out in STFC's PE strategy, and also to provide graduates with opportunities to develop their own skills – this development is explicitly detailed in the projects briefing document, agreed with graduate scheme management.

6. Outcomes and impact

The first objective of the SEE-PER project was to involve staff in a consultation on the support available for PE, with a focus on training and professional development, leading to recommendations for embedding our findings throughout STFC. The outputs of this consultation process allowed further outcomes for the SEE-PER project to be confirmed, ensuring that the work undertaken was helping to make it easier for staff to participate in good quality public engagement.

Three broad themes arose from the staff consultation process – areas that were highlighted as challenging for staff when participating in PER. There are no hard boundaries between these themes – they link together in a very organic fashion. In brief, they are:

- **Practicalities:** these are administrative and practical challenges in participating in PER – primarily (and expectedly!) the lack of time to participate and also a lack of management support.
- **Recognition:** staff do not always feel as if their efforts in PE are appreciated by their management, and there are few explicit opportunities for formal recognition, particularly with regards to promotion.
- **Confidence:** staff's lack of confidence – whether in how to engage with the public (and particularly young people), running engagement activities, or saying and representing the

‘right thing’ – was often cited as a barrier to participating in public engagement with research.

This final theme is directly linked to the challenge selected from the [State of Play](#) report: enhancing the take up of training and CPD for PER, and the quality of provision. Training was a particular focus of the focus groups – partly by design, but the importance of training, and its potential as a way to address the challenges identified by staff, was raised independently in every session.

Consequently, the desired outcomes of the project following the staff consultations were linked to training: an improved provision of effective and appropriate training for PER, improved efficiency (enabling more people to get involved), and a subsequent increase in the skills to do PER well, and an improvement in the quality of PER activity.

The training opportunities developed as part of the SEE-PER project also aimed to address, in some part, the first two themes identified by staff as challenges to participating in public engagement with research. Firstly, some of the ‘practicalities’ (e.g. the issue of insurance) can be addressed by training and resources. Secondly, some of the training developed incorporated opportunities for an increased recognition for PER and increased recognition of support for PER.

There is an improved proactive and reactive provision of effective and appropriate training for PER at the National Laboratories. Four new types of training have been trialed, and four existing training activities have been updated based on the outputs of consultations. There is an appetite for all forms of training: 576 staff members have attended training sessions (although note that this is not unique staff – many attended multiple sessions). In addition to this proactive training (arranged by the PE team), reactive training (arranged by a staff member, with a short-term objective) continued, but with an approach updated to include the outcomes of the PER activity for the staff member, as well as for their audience.

It is expected that the development of a programme of training will improve the efficiency of our training, enabling more people to get involved. Certainly more staff have accessed training over the course of SEE-PER than in previous years, but – as at present the developed training is still in the process of being piloted and embedded – there has also been an increase in the time input by the public engagement team to run this training. Over the coming year, this balance of time input to staff reached by the training programme will be monitored. As the initial review of training at the National Laboratories (Section 5.2) indicated that training was often one-to-one, it is expected that by building up the skills base of National Laboratories staff, the need for these individual sessions will be reduced.

Training has been well attended (with all events running at over 85% capacity), and preliminary evaluation indicates it has been well received by staff (with average satisfaction ratings of 4 or more out of 5). Staff have, however, also indicated the need for more practise, and for opportunities to assist in running activities before leading them. Looking forwards, sign-up for future planned training sessions is at or above capacity.

Preliminary evaluation of the “skills to do PER well” has also been positive, with ratings of 4 or more out of 5 when asking participants about the skills of trained staff supporting PER activities. Evaluating the quality of PER activity, to identify improvements reveals similarly high ratings (using a simple rating out of 5 to assess participant satisfaction with the event). There is baseline data available for PER activities. This baseline data does, however, report a high level of quality in any case – which will make it hard to show significant quantitative improvements. As part of STFC’s ongoing work on evaluation, qualitative evaluation techniques are being piloted, which has often resulted in feedback on staff, for example: *“Thanks again to all of you who helped make it accessible and super interesting to non-specialists like us too.”* This could be a key method of gathering data to assess the effect of staff training on the quality of PER activities: as this method is used more regularly, an evidence base will be built.

The extent to which participation in PER is given reward and recognition – particularly with respect to promotion – is not consistent across the National Laboratories, a fact that was highlighted during staff consultations. Two contrasting experiences put forward were:

- *It [public engagement] is encouraged and supported in itself. But it is not given enough credit toward appraisals, promotions etc.*
- *My dedication to this has been recognised [...] in the process of applying for a promotion.*

Embedding PER projects and training into two key STFC training schemes for early career researchers means that PER is recognised in the assessment of those schemes – successfully completing an apprenticeship, and the ‘rebanding’ (promotion) process which takes place at the conclusion of the graduate scheme. These schemes only apply to a relatively small number of staff – but this official recognition sets a good precedent of PER being used in promotion and appraisals. The inclusion of PE in these schemes also represents an increase in the recognition and take up of support for PER.

Recognition from senior and line management is appreciated and does take place – and through the SEE-PER project, opportunities to encourage this (such as the celebration for the Engineering Experience Week) have been created, and built into the programme of PE at the National Laboratories.

An unexpected outcome from the SEE-PER project has arisen from reflections on accountability within public engagement with research, particularly when seen as contributing to staff development. One reason given for dedicating staff time to PE is often that it is good for their professional development: but this is not always accepted as true. Following a focus group session (where lack of line management support for public engagement was raised as a challenge), one staff member emailed further thoughts:

Organising and participating in outreach should give people many useful, transferrable skills but I often don’t see that happening in practice [...] I see outreach events as projects. If

there was a project in [a department] then I expect to be able to see documentation regarding it. [...] If you got people involved in doing this, then the quality of their work should improve and management would find it easier to recognise it.

In essence, this staff member was suggesting an increase in accountability: evidence for the beneficial impact on staff of participating in PER. Evidence of the impact on the audience is collected as a matter of course within STFC – but not of the impact on the ‘engager’ (the staff member). This is true when designing a PER activity as well: STFC develops GLOs for the audience, but not for the engager. This issue was also raised when working on STFC’s [Wonder Initiative](#) – a “long-term commitment by STFC public engagement to move our focus towards audience-driven public engagement with under-served communities in the most socioeconomically-deprived areas of the UK. We want more working *with* people, and less delivering *to* people.” As part of the development of the evaluation brief for this initiative, the aims of *Wonder* were described according to the people involved at different levels of the programme – the audience, the initiative partners, and the initiative coordinator. GLOs for the audience were developed, but not (thus far) for the initiative partners (the engagers) or the initiative coordinator.

This lack of focus on the engager (the staff, in the context of SEE-PER) was evident in reporting too – at the start of the SEE-PER project, monthly reports on public engagement activity at the National Laboratories did not include data on staff training, or staff participation in public engagement activity. These reports are currently being altered to reflect the newly agreed programme indicators for the present strategy period of the STFC Public Engagement programme (2016-2021). These are a set of indicative annual figures for programme reach and outcomes in FY2020/21. They are STFC’s key indicators of success, and include two indicators involving staff at the National Laboratories (as STEM influencers): the number of influencers engaged / trained, and the number of people funded by STFC contributing to the PE programme.

The SEE-PER project addressed the challenge of “Enhancing the take up of training and CPD for PER, and the quality of provision”, in the context of the STFC National Laboratories. The project has shown that there is not one single solution to achieve this: different staff need a myriad of different training formats, content and even terminology. Just as with any training – for teachers, or science centre staff – the needs of the participant have to be considered: what they want to achieve through the training, and what level are they starting from? The staff consultation process – at the start of the project, and throughout the development of training – was essential to ensuring that the training was meeting the needs of the staff, as well as the needs of the public engagement programme as a whole.

In order to ensure accountability, GLOs should be produced not only for the training, but also for the engager when taking part in public engagement with research – and evidence should be gathered to support these outcomes, and to highlight the benefits of PER to the staff member, as well as to their audience. Reporting these outcomes, and enabling staff to report them as well, emphasises their importance to the PER programme as a whole.

7. Sustainability

Ensuring the sustainability of the work undertaken as part of the SEE-PER project has been a key part of the programme from its inception. It was designed to address a gap in the responsibilities of the STFC Public Engagement team at the National Laboratories: explicitly highlighting STFC staff as a group of the “STEM influencers” who are the focus of one of the five aims of the [STFC Public Engagement Strategy](#).

STFC’s PE team will continue to work on developing our package of staff support – with dedicated development time agreed for future years. This will allow us to further develop and monitor the effects of the training programme (including ongoing, long-term evaluation), as well as other recommendations arising from the SEE-PER project. Over the coming year, the STFC PE team will also be working to develop GLOs for engagers. This will form a part of the [Wonder Initiative](#), and will – it is hoped – be a part of future versions of the [Public Engagement Evaluation Framework](#).

A wide range of training (in terms of both the range of topics and the range of formats) was discussed during the information gathering phase of the project. Some of this training has been developed and piloted, and is being embedded into the core programme. There is also an ongoing training development plan, incorporating more topics and formats, which will be implemented over the coming year. This plan was prioritised not only considering the level of demand for particular activities, but also considering the availability of inputs and resources from other projects within the STFC PE programme. For instance, one suggestion was training in the school curriculum – ensuring STFC staff are aware of what students are learning at a given stage of their schooling, and how that relates to STFC’s work. An important input for this training will be work undertaken in the STFC “STEM Learning” project – working with teachers, through a series of focus groups, to identify key areas of the curriculum linked to STFC research.

Another key part of ensuring the sustainability of the outcomes of the SEE-PER project was to embed training for PE within STFC’s existing professional development programmes. This improves the sustainability of the staff support project for two reasons – firstly, by embedding public engagement as part of STFC’s existing training schemes, it not only enables the training to take place, but also ensures that PE is seen as a core part of every staff member’s responsibilities. Secondly, the PE projects were designed and presented to show both the PE outcomes, and the skills which the graduates would develop. This emphasis on the engager, alongside the outcomes for the audience, in the project briefings document, follows advice given in the APPE session, framing “PE as a key part of ... personal development”.

As detailed in Section 6, STFC’s PE indicators have recently been agreed, including the number of influencers engaged / trained, and the number of people funded by STFC contributing to the PE programme. The inclusion of National Laboratories staff in these indicators ensures accountability for the participation of staff in PE – and the need to report on these figures ensures a sustained effort to support staff in the development of their PER skills. Monthly reports, produced by each site PE team, are being altered to reflect the programme indicators – which will mean that staff training is being reported, and reflected on, on an ongoing basis.

Other recommendations arising from the data gathering activities, and from the training programme, will be presented to senior management in March, once the new structure of the National Laboratories is in place: ensuring the buy-in of the new senior management is a crucial step to guaranteeing the sustainability of the wider support for National Laboratories staff participating in PE.

8. Final thoughts

The SEE-PER project has been an incredibly valuable experience, and reaffirmed the belief that the National Laboratories staff are absolutely vital to the success of the public engagement programmes. Staff support for, and enjoyment of, PE was well known at the lab sites, but the extent of their willingness to think critically about the development of their own PER skills, in conjunction with the development of PER activity at the laboratories, has been a welcome surprise.

The main lesson learned in terms of PER training, is that staff input is key: there is no one training method that will be successful. The experience, requirements and situation of the staff member(s) all play a role in defining the most appropriate content, format and style of training – even the words used to describe the training. The trainer must adapt to the needs of the staff member(s) whilst ensuring that the GLOs of the training – and of the subsequent PER activity – are met. Only by listening carefully to staff input will the training be effective: in terms of the vocabulary used to describe (and advertise) the training, this can be unique to each type of training, and should be agreed and tested with staff before being finalised.

A final recommendation would be to record and report all PER training – no matter what format it's in, whether it was proactively or reactively arranged – as well as considering the GLOs both for the training itself, and for the outcomes of the PER activity for the staff member. Funders, as well as the PE teams within institutes, can use this as a way of framing PE as an important part of professional development, addressing two of the most common barriers cited by staff for accessing PER training and activity – a lack of time, and a lack of management support. The SEE-PER project has shown that it is possible to demonstrate the dual purposes of PER – positive outcomes for the audience and development opportunities for the staff member – and obtain management approval to dedicate time to PER.

9. Case studies

9.1 Project activity: Staff focus groups

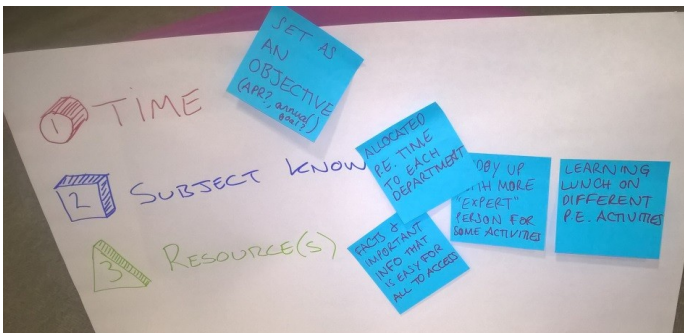
A series of focus groups were designed and run in order to consult with staff about the barriers they face in order to participate in public engagement with research, and training for public engagement with research. It was intended that the outputs of these sessions would inform the development of a new offer of training opportunities for staff at the National Laboratories.

Staff were selected to participate in the focus groups from a range of departments, seniority and experience of PER. 75 staff attended, and groups were arranged such that staff did not interact with their direct management chain, in order to encourage open and honest sharing of challenges and ideas. These focus groups were introduced and facilitated by the PE team – starting with thanking staff for their time, both to attend the session and to support PER.

The introduction included three key points – highlighting one of the five aims in the STFC PE strategy, to support “STEM influencers”, those people who tell the STFC (and STEM) story. As staff members, the participants in the focus groups are key influencers for the PE programme. The second point raised was the results of the staff e-survey (Section 3.4), focussing on the fact that, while a significant proportion of STFC staff do feel that outreach and engagement is recognised in job roles, this is by no means consistent across the organisation. The final point was a brief discussion, in groups, of what public engagement with research consitutes.

In small subgroups, the focus groups were asked to generate all of the challenges they – or their colleagues – face in order to participate in good quality public engagement. This was followed by a prioritisation and sharing exercise, where each subgroup chose the three or four biggest challenges.

The subgroups were moved to a different subgroup’s challenges, and asked to generate solutions to those challenges. They were told to include all possible solutions – whether practical or not – to give the broadest range of potential ideas. An example photograph of some of the challenges and



solutions is given in Figure 9.

By being asked to find solutions to challenges generated by other subgroups, it was hoped that new perspectives and ideas would be considered – a strategy which seemed to be successful.

Figure 9 Example photograph of results of focus group session, looking at possible solutions to key challenges to good quality PER.

The final part of the session focussed specifically on training – this came up independently in all focus groups, and was studied in more detail both because it was the focus of the SEE-PER challenge, and because it is the area over which the PE team has the most direct control. Subgroups were asked to discuss potential training and resources.

9.2 Project activity: Engineering Experience Week

The National Laboratories run a large work experience programme, organising over 200 placements each academic year. Traditionally, individual students have been matched with individual supervisors, and the National Laboratories PE team run supervisor briefings and debriefs as training. The analysis of staff support for the work experience programme (given in Section 3.2, Figure 5) showed that early career staff were far less likely to support the work experience programme, although acting as a supervisor provides significant opportunities to develop their skills.

Consequently, a pilot Engineering Experience Week (EEW) was run at RAL in addition to the traditional scheme: this was, in essence, a team work experience project, where teams of school students worked with an STFC staff member (their supervisor) on an engineering project, as part of a structured week-long activity.

All 14 supervisors who took part in the EEW were early career staff on the graduate or apprentice schemes. The EEW was specifically designed with the dual purposes of providing students with work experience placements and of giving staff the opportunity to develop their project and team management skills in a supported environment. This explicit focus on staff development, as well as the desired outcomes for the school students, was the result of discussions with the graduate and apprentice scheme management, and the results of the staff consultation process.

The supervisors helped to design the week, and determined what training and support they received. The PE team provided the structure of the week, and support and advice designing the engineering projects. Individual support was provided for staff members who felt less confident in their roles, from within the graduate / apprentice scheme as appropriate. A debriefing session was also run, to enable supervisors to reflect on their experience (as well as the school students' experience).

In addition to the training, the EEW also included a celebration of the work undertaken by the staff involved. The line management of the supervisors were invited to the celebration, so that they could appreciate the achievements of their staff (13 line managers attended). Certificates were presented by a National Laboratories Director to the staff members who participated in the scheme – as shown in the photograph in Figure 10. Staff were specifically asked whether they wanted a certificate, and unanimously agreed that they did. This recognition from senior management and line management was an important part of the planning for the EEW: an explicit 'thank you and well done' from senior management, but also senior management leading by example – devoting time to

attend the celebration event, signifying that it is viewed as a worthwhile project.



Figure 10 Photograph of early-career staff supervisors during the Engineering Experience Week.

9.3 Personal reflection: Reactive training

Reactive training, typically involving supporting staff on a project of their choosing, has always been a part of the STFC PE programme. After becoming involved with the PE programme, and volunteering at a number of events in a support capacity, a staff member requested support for a project that she was interested in starting: developing a programme of PER activities for a school STEM club.

Part of the training involved the development of the programme – including outcomes, a discussion of potential resources and the correct level for the audience (i.e. the elements detailed in Section 5.8). A significant part of the reason the staff member requested support, however, was to put a proposal together to submit to her management to obtain permission to proceed with the project during work time. Her management were supportive of her volunteering as part of the centrally organised PER programme – but felt that the significant amount of time that would be needed for the project needed justification.

GLOs for the programme for both the audience and the staff member were co-created, and a proposal developed. This proposal was accepted by her line management, with the condition that the project should be formally included in her appraisal process (April 2019), including evidence of positive outcomes for the audience and in terms of her professional development.