



NATIONAL SCIENCE LEARNING NETWORK REGIONAL PROGRAMME

Final evaluation report, spring 2015

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Executive summary

Background to the National Science Learning Network's regional programme

In August 2013, the National Science Learning Network (NSLN) began the third phase of its regional programme. For this phase, a new model was introduced to reflect the greater role schools and colleges were playing in the education system in England, particularly in leading continuing professional development (CPD) and school-to-school support.

Under this new model, the network comprises five regional consortia, led by a regional operator, and made up of around 10 local 'science learning partnerships'. These partnerships, or SLPs, combine local expertise in teaching and applying science, facilitating CPD, and providing school-to-school support. They are led by local teaching school alliances, schools and colleges with excellence in science, higher education institutions, and other local partners with cutting-edge expertise in science. The SLPs are supported in their day-to-day work by a cadre of regional development leads (RDLs).

This phase of the NSLN regional programme ran from August 2013 to March 2015. It was designed explicitly to be a transitional phase, moving from a centrally-led model to a more schools- and colleges-led model. Isos Partnership was commissioned to evaluate its implementation and impact, and to provide formative feedback throughout this period.

What has been delivered?

- **Greater levels of CPD are being delivered locally** – one of the key aims in moving to a new delivery model was to enable the staff in schools and colleges to lead the delivery of local science CPD. In the first 18 months of the new network's operation, there has been a significant shift towards CPD support being delivered locally by schools and colleges. The target for March 2015 has been achieved and, by March 2015, almost three quarters (72%) of the network's science CPD support is now being delivered by schools and colleges. In March 2013, it was 50%.
- **Rapid increase in the amount of CPD being delivered by the network** – over the past 12 months, the network has achieved a rapid increase in the levels of CPD support it has delivered. Between April 2014 and March 2015, the network has achieved a percentage-point increase in the number of CPD units it has delivered of 165%.
- **The network has increased the number of schools, colleges it is reaching** – the SLPs are reaching more schools and colleges than they were in March 2014. Between April 2014 and March 2015, the network has increased the number of schools and colleges it has reached by 73% and the number of teachers and technicians by 68%. Between April 2014 and March 2015, one in five schools and colleges in England engaged in CPD offered by the network. For secondary schools, the figure was two in three. The SLPs are also delivering more CPD units per individual participant, which suggests that some SLPs are using more intensive, bespoke CPD activities to engage schools and colleges.

While these trends illustrate the way in which the network has established itself and achieved significant increases in the levels of CPD it is delivering over the past 12 months, these achievements need to be set in context. Aside from local delivery, the network has got closer to, but has not reached,

the targets for engagement (total amount of CPD units) and reach (the number of schools / colleges and participants reached) that were set at the start of the transition. This reflects two sets of factors.

First, the transition from the previous regional model to the SLP-led network took more time than anticipated. Due to the time taken to identify and establish the SLPs, many did not start to market and deliver CPD until the final term (the spring term) of 2013-14 (April 2013 to March 2014). It has taken more time than anticipated to re-build the presence and generate momentum for the new, SLP-led network following the transition in 2013.

Second, there have been wider changes to the way in which schools and colleges access external CPD, particularly external subject-specific CPD, to which the new network has had to adapt. We found evidence that schools are less willing to release staff for subject-specific CPD during teaching time in order to keep them in the classroom and to avoid incurring the costs for cover. We also found that schools are increasingly looking to in-house models of CPD, such as joint practice development, action research and lesson study, as their main mode of CPD. Many schools are only using external subject-specific CPD when they do not have the expertise in-house.

What has been the impact?

The network has sustained its reputation for high-quality science CPD and has increased the levels of impact reported by CPD participants on staff, schools and pupils. Levels of impact reported in March 2015 have exceeded those achieved in the final year of the previous delivery model. It is a very significant achievement that, within five terms, the new network has exceeded the levels of reported impact of what was a well-established and mature delivery model.

- **Nine in 10 CPD participants reported that the CPD they had accessed had had an impact on their knowledge skills and practice.** In addition, our survey data showed that almost nine in 10 CPD participants (88%) reported that the CPD they had accessed had an impact on their confidence to teach and their knowledge and skills. Over eight in 10 (85%) reported an impact on their practice and over three quarters reported an impact on their ability to use evidence and research in the classroom (77%). We found similar levels of impact reported by leaders in schools whose staff had accessed CPD: nine in 10 school leaders reported that the CPD staff had accessed had an impact on the quality of teaching in their school. Science leaders reported to us that the CPD their staff have accessed has been of a very high quality, and that they would access CPD from the SLP again and recommend to colleagues. This compares favourably to the levels of impact from other CPD reported by teachers in England and in other countries through the international survey carried out by the organisation for economic co-operation and development (OECD).
- **Eight in 10 CPD participants reported that the CPD had had an impact on their pupils.** Our survey data asked specifically about different forms of impact on pupils. We found that nine in 10 CPD participants reported an impact on pupils' engagement (92%), motivation to continue studying science (90%), and progress and attainment (88%). School leaders agreed: almost nine in 10 (87%) reported an impact on pupils. Science leaders reported to us that the CPD that they and their staff had accessed had made a difference in terms of pupils being more engaged in lessons, staying on task, developing new investigative and team-working skills, and generating creative ideas. In some instances, science leaders reported that pupils' enjoyment of science lessons was translating into interest in extra-curricular science, technology, engineering and mathematics (STEM) activities.

- **Eight in 10 CPD participants reported that the CPD had had an impact on wider practice in their school or college.** The new network is seeking to foster a culture of using science-specific CPD, and subject-specific CPD more generally. We found evidence that the network's CPD was being shared in order to shape department-wide teaching and learning practices in schools. Our survey data showed that nine in 10 (90%) CPD participants reported an impact on their colleagues' practice and a wider impact on the teaching of science within the school. We also found evidence that access to the network's CPD was helping to create or, where it was already in place, reinforce a culture of using subject-specific CPD in schools. For example, in our survey we found that nine in 10 (96%) CPD participants and almost nine in 10 (87%) school leaders considered that the CPD they accessed from the network had reinforced to them the value of high-quality science-specific CPD in improving the quality of teaching and learning.

Another central aim of the NSLN regional programme has been to embed a culture of evaluating the impact of subject-specific CPD in order to maximise its long-term effectiveness in the classroom. Not all science leaders and CPD participants to whom we spoke were fully confident in being able to identify the impact of what they had taken from CPD in the classroom. Over the course of our evaluation, the national operator, the regional consortia and the SLPs have made concerted efforts to re-emphasise to CPD facilitators the importance of planning and reporting impact in order to build teachers' and technicians' skills to do this in their own schools.

How well has the network operated?

Through our evaluation, we have explored the way in which the network has increased its levels of delivery and impact during its first 18 months. We have focused on identifying what has worked effectively, the challenges that have arisen, and areas for further development. We have structured our findings around four key functions that a CPD network needs to perform effectively.

Function 1: Establish a presence and maintain the brand of the network

The majority of SLPs have established their presence and reputation as providers of high-quality local science CPD, and the network is recognised by education leaders and ministers at a national level. The SLPs that have developed their partnerships and reputation among local schools and colleges, and have continued to expand their networks, have taken a pro-active and persistent approach to communications. In particular those led by teaching schools or established schools-led CPD providers have capitalised on their existing networks and have used launch events to announce their presence and develop a network of contacts with whom to work to identify CPD opportunities.

While the network has taken strides to establish itself nationally, regionally and locally, we identified three key challenges for the network to continue to address in order to sustain and enhance the brand of the network and of individual SLPs. The first is to ensure that there is consistent national recognition of the network brand. The second is to ensure that there is effective co-ordination of national, regional and local marketing. The third is to continue to gather and share up-to-date contact information for local science leaders to enable SLPs to forge new connections and expand their networks. Improvements have been introduced to address these issues, and will be vital to sustaining and expanding the network's reach.

Function 2: Build sufficient regional and local capacity to deliver CPD

Over the course of the first 18 months of its operation, the network has built new capacity to deliver science CPD support regionally and locally. By March 2015, five new regional consortia and 51 new

SLPs had been established as local hubs of expertise from whom schools and colleges can access science CPD, and 780 schools-based CPD facilitators had been trained. During our evaluation, we focused on identifying the key success factors and challenges for each of the key roles within the network.

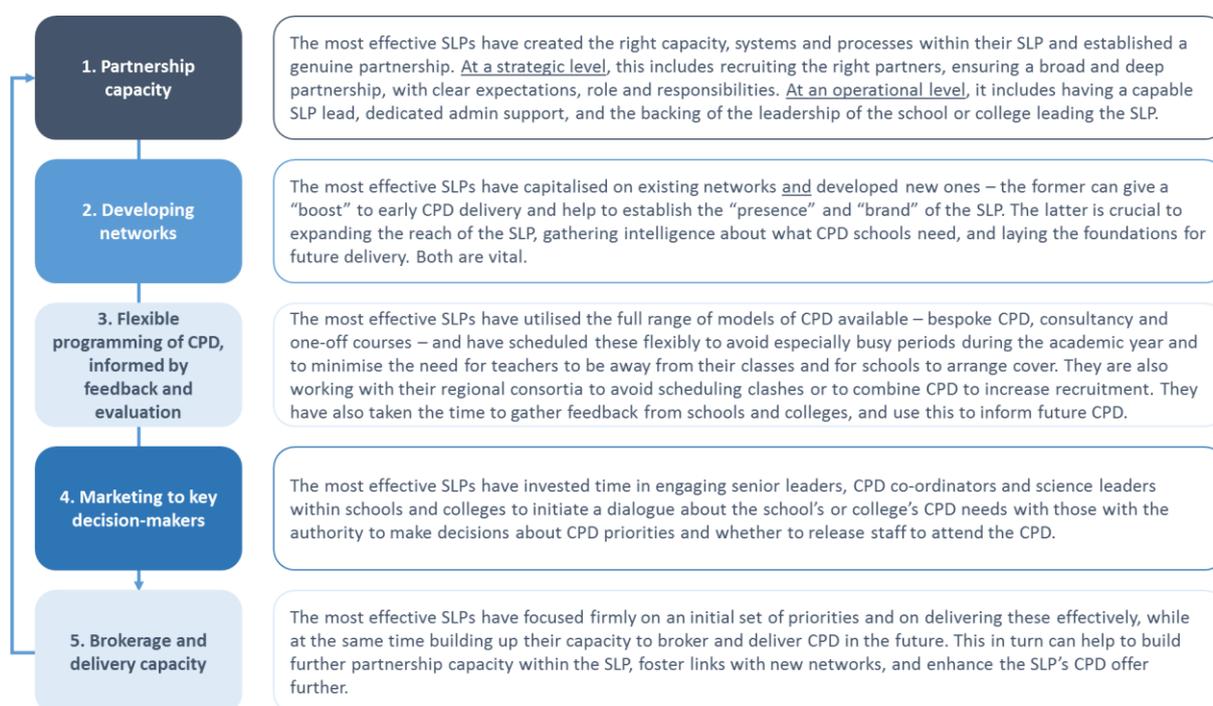
The **regional operators** have performed important roles in setting up and sustaining the network effectively, including drawing on lessons of what has worked well to shape their consortia and plan strategically for their regions. All regional operators have been effective in co-ordinating and planning CPD activities across their region, acting as a channel of communication and feedback between the SLPs and the national operator, and identifying gaps in the regional CPD offer and commissioning SLPs to fill those.

There are two other aspects of the regional operator role that are more developed in some regions than others. First, some regional operators have provided support to SLPs in scheduling and marketing CPD, and one has recruited a member of staff to co-ordinate their regional marketing. Second, some regional operators have started to explore more collaborative ways of working to develop new CPD activities that are tailored to a region's needs. The role of the regional operators has now shifted to focus more explicitly on building capacity and leadership, so that the SLPs and RDLs can play a greater role in leading their regional consortia and developing new CPD activities.

The **regional development leads (RDLs)** have played a vital role in providing day-to-day support to the SLPs. It is difficult to underestimate the importance of the RDLs during the first 18 months of the new regional model. All SLPs have emphasised this point strongly. The RDLs played a vital role in supporting the SLPs to establish their partnerships, and in brokering and delivering CPD activities. The different starting-points and level of expertise, skills and capacity for delivering science CPD have placed a premium on the skills of the RDL to build capacity within SLPs and to identify and broker CPD activities. Over time, the RDL role has developed into a specialist science CPD broker.

We have identified three key features that are necessary for the RDL role to be performed effectively. First, RDLs need to have specialist subject knowledge so as to be able to engage science leaders. Second, RDLs need to be pro-active so as to engage prospective partners and broker CPD activities. Third, RDLs need to be able to build capacity through coaching, mentoring and embedding evaluative practices within their SLPs. The network has now agreed a consistent set of roles and responsibilities for RDLs, as well as other roles within the network, which should help to disseminate the most effective practice, ensure greater consistency, and enhance the reach and capacity of the SLPs.

The **science learning partnerships (SLPs)** are the beating heart of the new regional network. Their strength is that they have the potential to harness the expertise of current teachers and technicians to support their peers to develop their own practice. Where SLPs have been effective in establishing themselves and delivering high-quality CPD, we have identified five key factors in their success.



The SLPs that have been most successful have put many of these factors into practice. They have developed broad and deep partnerships, with clear roles and responsibilities, they have developed an offer comprising the full range of CPD activities, and they have been pro-active in engaging schools and colleges. By contrast, SLPs that have been less successful have not developed deep partnerships, have not been pro-active in building networks, and have relied predominantly on scheduling external courses rather than developing more flexible bespoke and consultancy support.

SLPs need broad networks, delivery capacity, and a range of specific skills in order to sustain CPD delivery. Having sufficient capacity is key to their effectiveness. We found that SLPs led by teaching school alliances, multi-academy trusts, and other established schools-led CPD providers had potential advantages in being able to put the right capacity and other key success factors in place, but that it was by no means inevitable that SLPs led by these institutions would be effective. We concluded that the success of a SLP depends on more than the type of organisation(s) in which the SLP is based. To be successful, a SLP needs to be led by an organisation or organisations that can bring in active partners, can identify the right people to lead its day-to-day work, and has sufficient capacity to identify, broker, and deliver the CPD local schools and colleges want.

If the SLPs are at the heart of the regional network, the **CPD facilitators** that they train and deploy are its lifeblood. Where SLPs have been successful in training and deploying CPD facilitators, they have focused on identifying a small number of committed individuals, invested time in regular communication with their facilitators, and used small, practical steps to build up their experience of facilitating CPD. Some SLPs linked to teaching school alliances have put forward the strongest of the CPD facilitators that they have trained to become specialist leaders of education (SLEs), so as to be able undertake science-focused school-to-school support. There is potential to build on this to further enhance the delivery capacity of the new regional network.

To date, however, the deployment of SLP-trained CPD facilitators has been relatively gradual. This has been due to difficulties securing time away from the classroom for CPD facilitators, CPD activities having to be postponed due to low levels of recruitment, and an initial lack of clarity in some parts of the network about the expectations of those who had been trained as CPD facilitators. As a result,

the capacity of this crucial aspect of the new regional delivery arrangements has not yet been fully tested.

Function 3: Recruit to and deliver CPD

While recognising the increases in levels of delivery and reach between April 2014 and March 2015, the challenge reported to us most consistently has been difficulties in recruiting participants onto CPD activities. Regional operators, RDLs and SLPs alike have highlighted this as the biggest obstacle to increasing levels of delivery to meet targets. The most effective SLPs have been pro-active in their engagement of schools and colleges, and have been flexible in utilising the full range of CPD activities. The confidence and skills to do offer the full range of CPD activities, including bespoke CPD, are not yet consistently embedded across all SLPs. Ensuring this is consistent will be key to continuing to increase the network's reach and the levels of CPD it delivers.

Members of the network also reported frustrations with the way the booking system operated. Improvements to this have been made, and the feedback we have received has been more positive as a result. Nevertheless, continuing to gather feedback from CPD practitioners and testing whether the booking system is working as effectively as possible will be key to making small, incremental improvements in the effectiveness of this central system.

Function 4: Gather feedback, ensure quality and impact, and sustain the network

One of the network's greatest strengths is that it has the scope to develop nationally-consistent, high-quality CPD resources, informed by cutting-edge research, and tailor this to meet local needs. Many of the CPD resources, the so-called professional development experiences (PDEs), were valued highly by members of the network for this reason. Work has been undertaken to review the PDEs, and to ensure they are updated regularly and that there is clarity about how they can be adapted for local use.

Another strength of the network is that, in the impact toolkit, it has an effective mechanism for gathering evidence of the impact of the CPD on practitioners, schools and pupils. During the first 12 of the network's operation, however, the processes and feedback loops for sharing with the individual SLPs the impact data from the CPD that they had delivered were not in place. Such feedback loops are vital for SLPs, not only to evaluate and refine their practice, but also to be able to demonstrate their impact in marketing their offer to local schools and colleges. We understand that processes have now been put in place in all regional consortia to share this data routinely with SLPs.

Reflections for the future

The period between August 2013 and March 2015 has been one of immense change for the NSLN regional programme, and for the education system in England as a whole. This has presented huge opportunities, as well as very considerable challenges, for the establishment of the new regional programme.

Arguably the greatest achievement of the NSLN regional programme has been that, during this period of reinvention, it has not only maintained but also increased the quality and impact of its CPD offer. The network has also achieved its primary aim of creating a model of CPD and the improvement of science teaching and learning that is genuinely led and delivered by schools for schools. The experience of this period has proved just how challenging it has been to sustain levels of delivery during a period of such significant transition and change. While there was a drop during 2013-14, when the capacity of network was diminished by the transition to the new model, between April 2014 and March 2015 the levels of CPD delivered and the reach of the network show a very encouraging

trajectory. This is testament to the hard work, persistence and inventiveness of all those engaged in making the NSLN regional programme a success.

At the crux of some of the challenges experienced is a question about balancing what needs to be “tight” and consistent across the network and what can be “loose”, where regional consortia and SLPs have greater flexibility and autonomy. Much of the debate about the role and effectiveness of the core central systems, such as booking and the PDEs, reflects this issue. Getting this balance right is at the heart of unlocking the immense potential of the new regional delivery structure – ensuring consistency, quality and a cutting-edge body of national science expertise on the one hand, and local innovation on the other.

Overall, to continue to succeed in the current challenging and changing educational climate, members of the network at national, regional and local level will need to:

- have the systems in place to learn from each other;
- be adaptable and responsive to demands from schools, colleges and the wider education system;
- be innovative in how they shape, rather than just respond to, the market;
- be outward-facing in how they foster and support networks of professionals; and
- be tough and resilient in carving out capacity in the face of competing demands for time.

Individual partners in the network have proved they have these qualities and abilities. What has been achieved in the five terms between August 2013 and March 2015 is testament to this. The challenge now is to embed these qualities systematically and consistently as a joint endeavour, and to make the network greater than the sum of its parts.

Introduction

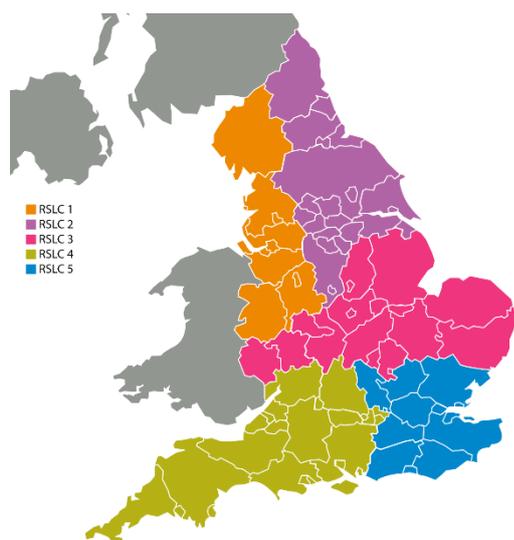
Background to the National Science Learning Network's regional programme

In August 2013, the National Science Learning Network (NSLN) began the third phase of its regional programme. The NSLN is operated by MyScience, which was established in 2004 by the White Rose University Consortium (comprising the universities of Leeds, Sheffield and York) and Sheffield Hallam University. MyScience operates the National Science Learning Centre, the National STEM Centre, and the regional programme for science CPD. The regional programme has been funded by the Department for Education (DfE) to provide high-quality science continuing professional development (CPD) for teachers and technicians in state-funded primary schools, secondary schools and colleges in England.

Before 2013, the regional programme was delivered through a network of nine regional science learning centres (RSLCs) across England. The work of the nine RSLCs complemented the science CPD that was available through the National Science Learning Centre and the National STEM Centre.

In 2013, at the start of the third phase of the NSLN regional programme, a new model was designed that aimed to blend the strengths of the previous regional arrangements with a greater role for schools and colleges in leading and delivering high-quality local science CPD. These changes were made to reflect the shift to a more schools- and colleges-led education system in England, in which partnerships of schools and colleges would play a greater role in leading CPD and school-to-school support.

The aim was to combine the facilities and expertise of the RSLCs with those of successful schools- and colleges-led partnerships in order that science CPD could continue to be made available locally to all teachers and technicians in a more sustainable and efficient way.



Under this new model, the network comprises five regional consortia, led by a regional operator, made up of around 10 local 'science learning partnerships'. Some regions combine these with the physical facilities of the previous RSLCs, which operate as 'delivery centres'. These partnerships, or SLPs, combine local expertise in teaching and applying science, facilitating CPD, and providing school-to-school support. They are led by local teaching school alliances, schools and colleges with excellence in science, higher education institutions, and other local partners with cutting-edge expertise in science.

The SLPs were supported to establish their partnerships and their local CPD offer by the regional operators and a cadre of regional development leads (RDLs). The RDLs have provided the day-to-day link between the regional operator and the SLPs.

An important function of the SLPs is to identify and train outstanding local science practitioners to become CPD facilitators, to increase the capacity of their partnerships and harness current classroom expertise to offer high-quality, cutting-edge science CPD support.

The network itself has developed and operates a number of core systems to support the SLPs to deliver their local CPD programmes. These core systems are run centrally and overseen by the national operator. They include:

- national marketing of the network;
- a booking system for participants to find places on local CPD activities;
- CPD development – developing the CPD materials to be used when delivering a core programme of CPD activities, agreed by MyScience and the DfE; and
- a consistent, national pricing policy.

The regional programme is subsidised by funding from the DfE. Schools pay a fee for the CPD that their staff access, in line with the national pricing policy. They are able to claim a proportion of the fee back through an 'Impact Award', so-called because the release of funding has been linked to the completion of an impact report after the CPD has taken place.

Within the network, there are three organisations that play the role of the regional operator:

- Sheffield Hallam University is the regional operator for the Derbyshire, Yorkshire and the Humber, and the North East region (referred to as RSLC 2 on the map above);
- the University of Hertfordshire is the regional operator for both the Central region (RSLC 3) and the London and the South East region (RSLC 5); and
- MyScience is the regional operator for both the North West region (RSLC 1) and the South West region (RSLC 4).

As of March 2015, there were 51 SLPs in the network:

- 6 in the North West (RSLC 1 on the map above);
- 10 in Derbyshire, Yorkshire and the Humber, and the North East (RSLC 2);
- 12 in the Central region (RSLC 3);
- 10 in the South West (RSLC 4); and
- 13 in London and the South East (RSLC5).

The establishment of the SLPs was phased in during the course of this phase of the regional programme as the capacity of the regional consortia grew and to ensure sufficient geographical coverage. Each regional consortia is responsible for planning and delivering a programme of high-quality science CPD to the schools and colleges within its region. Each region has a set of targets relating to what they should deliver, which include:

- **reach** – the proportion of schools and colleges that have accessed the CPD;
- **engagement** – the number of CPD activities (counted as units) delivered;
- **participants** – the number of staff accessing the CPD;
- **impact** – on participants' knowledge, skills and practice, on schools' wider practice, and on pupils' and students' outcomes; and

- **local delivery** – the proportion of CPD that is delivered in schools and colleges, so as to build sufficient capacity and expertise to support local science-specific CPD and contribute to the network’s long-term sustainability.

This phase of the NSLN regional programme ran from August 2013 to March 2015. It was designed explicitly to be a transitional phase. Isos Partnership was commissioned to evaluate the implementation and impact of this phase of the regional programme. We were asked to provide not only an overall evaluation at the end of the two years, but also to provide formative feedback at key points during this period in order to identify what had worked well and what had not so that these lessons could be embedded as the network developed. We have worked alongside the network from the autumn of 2013 to the spring of 2015.

Our approach to the evaluation

Our evaluation was designed to run in parallel with the development of the regional programme so as to provide both formative feedback about implementation, good practice and challenges and a summative evaluation of delivery and impact. In short, the aims of the evaluation were to:

- consider the success of the new delivery model, particularly the role of the SLPs, in engaging schools and colleges in science CPD;
- identify actions that may be needed to refine the model so as to support local delivery and address any obstacles encountered during the transition to the new model; and
- assess the impact of the of the CPD delivered through the regional programme on participants’ knowledge, skills and practice, on schools’ wider practice and attitudes to subject-specific CPD, and on pupils and students.

We approached the work in four phases, each with a distinct focus.



During each phase, we carried out:

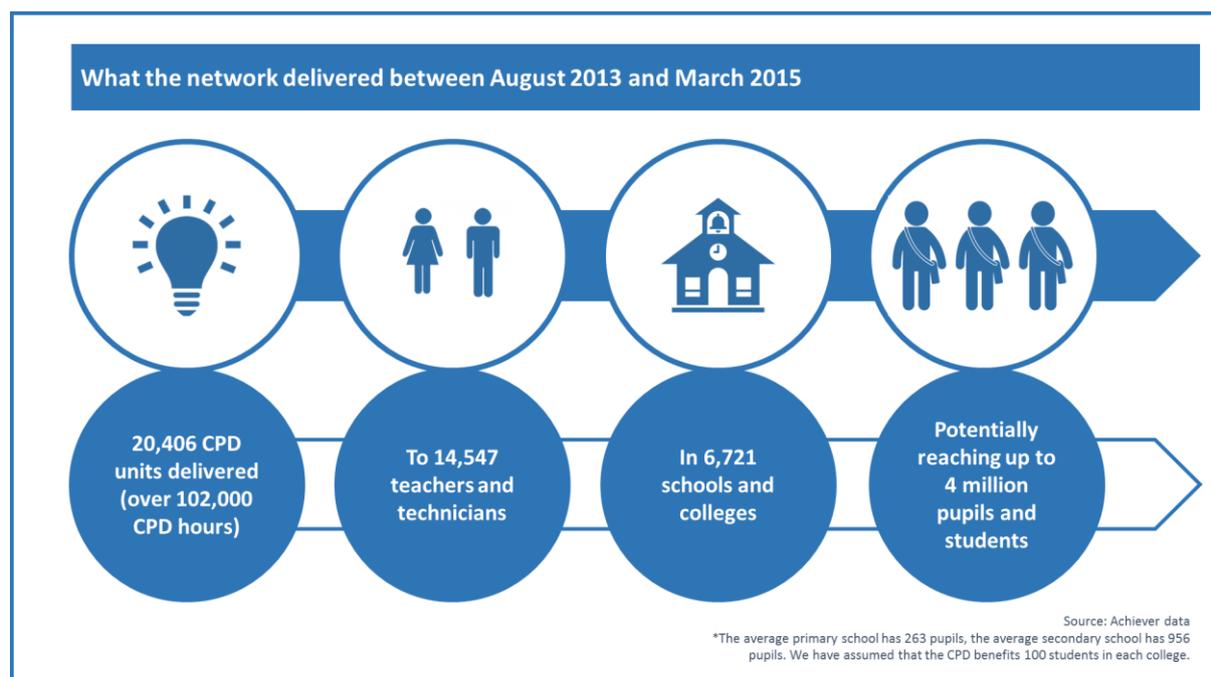
- semi-structured interviews with key leaders within the network, including MyScience, the regional operators, and (in phases 2, 3 and 4) a selection of RDLs and SLP leads;
- semi-structured interviews with a selection of heads of science / science co-ordinators in schools that had accessed science CPD from the SLPs with whom we were working (during phases 2, 3 and 4);
- a survey of CPD participants and heads of science / science co-ordinators on their use of the CPD they had accessed and its impact in their classroom and their school (phase 4 only);
- workshops with the members of each of the five regional consortia (during phases 3 and 4 only); and
- analysis of key data on what has been delivered and its impact on practice and outcomes.

Over the course of the evaluation, we worked in depth with a total of 16 SLPs. To balance breadth and depth of analysis, we worked with six SLPs throughout all of the phases of our evaluation, and with four other SLPs in phase 2 and a further six in phase 4. The 16 SLPs were chosen in order to ensure coverage of:

- **geography** – we selected SLPs from each of the five regions;
- **models** – we selected SLPs led by a range of different institutions, including teaching school alliances, multi-academy trusts, other schools-led networks and CPD providers, and higher education institutions; and
- **innovative practice** – in the later phases of fieldwork, we chose some SLPs where we knew innovative ideas had been developed in order to identify key success factors.

We are extremely grateful to all those with whom we worked who contributed to this evaluation. We were struck not only by the openness and honesty with which these colleagues reflected on the network and their role within it, but also by the depth of commitment to leading the development of excellent local science CPD. We hope that this evaluation helps all of those involved in the network to continue to lead science CPD within their own partnerships and localities.

Chapter 1: What has been delivered?



Since August 2013, the network has undergone a significant transition from delivering science CPD through nine RSLCs to a more localised, schools- and colleges-led network of newly-established SLPs. During this transitional period, the network has continued to develop and deliver high-quality, cutting-edge science CPD support to primary and secondary schools and colleges across the country. As the graphic above illustrates, in five terms the network has reached potentially four million pupils and students. This chapter provides a short summary of what the network has achieved during this period.

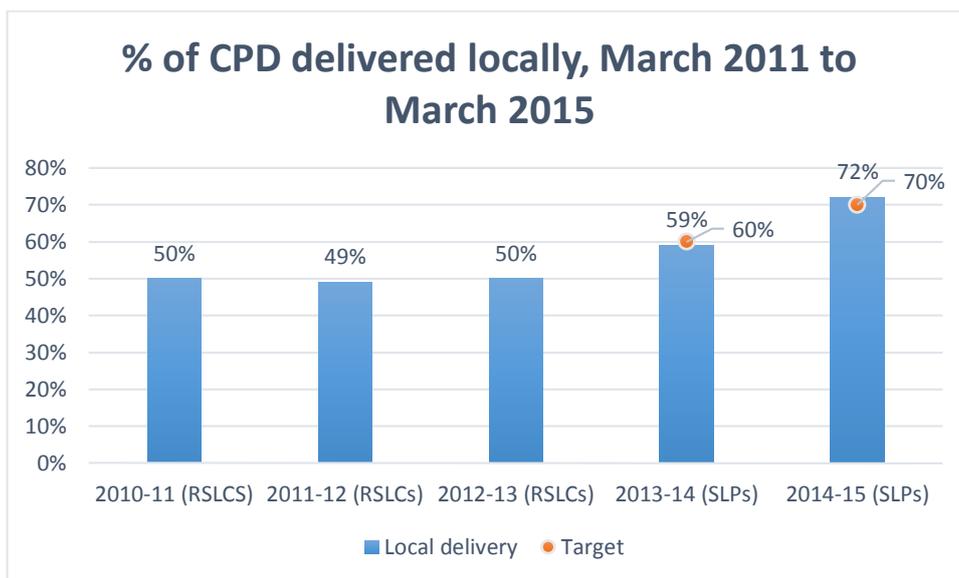
There has been a significant shift towards CPD support being delivered locally by schools and colleges

In addition to continuing to deliver high-quality science CPD support, one of the key aims in moving to a new delivery model has been to enable more schools and colleges to lead the delivery of local science CPD. Figure 1.1, below, shows that there has been a significant shift in the volume of CPD within the network that has been delivered locally, by schools and colleges.

Under the previous model, local delivery referred to CPD that was delivered either by schools or satellite venues that worked in partnership with the RSLCs. Take the figure for March 2013 for example. This shows that 50% of the CPD delivered by the network was delivered by the RSLCs themselves, and 50% was delivered locally – of the latter, 33% was delivered by schools and 17% through satellite venues.

The targets for local delivery under the new model were deliberately set higher to reflect the fact that one of the key aims of the transition to the new model was to enable and encourage schools and colleges to lead local science CPD support. Figure 1.1 shows that the March 2014 target was largely achieved and the March 2015 target has now been exceeded: by March 2015, almost three quarters (72%) of the network's science CPD support was being delivered by schools and colleges.

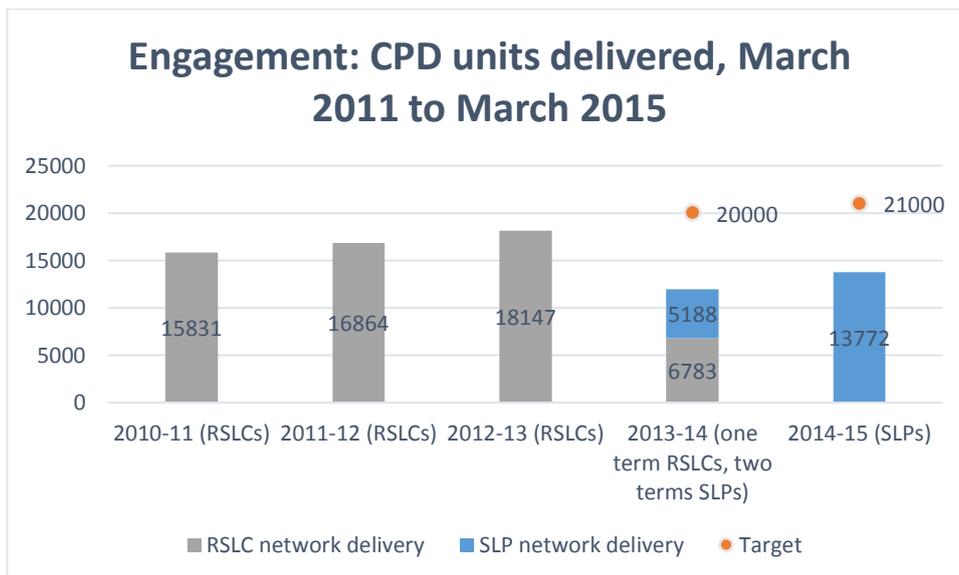
Figure 1.1: Proportion of CPD delivered locally between March 2011 and March 2015



Source: Achiever

Over the past 12 months, the network has achieved a rapid increase in the levels of CPD support it has delivered

Figure 1.2: CPD units delivered by the network between March 2011 and March 2015



Source: Achiever

The introduction of the new regional model began in August 2013. Figure 1.2, above, shows that 2013-14 was a transitional year for the NSLN regional programme. During this time, SLPs were being established and many only began to deliver CPD in the final term of that year (the spring term of 2014). As a result of this transition and broader changes in the way schools are accessing external subject-specific CPD, which are described below, the network is still in the process of re-establishing itself. The targets for March 2015, set at the outset of this phase of the regional programme, have not been

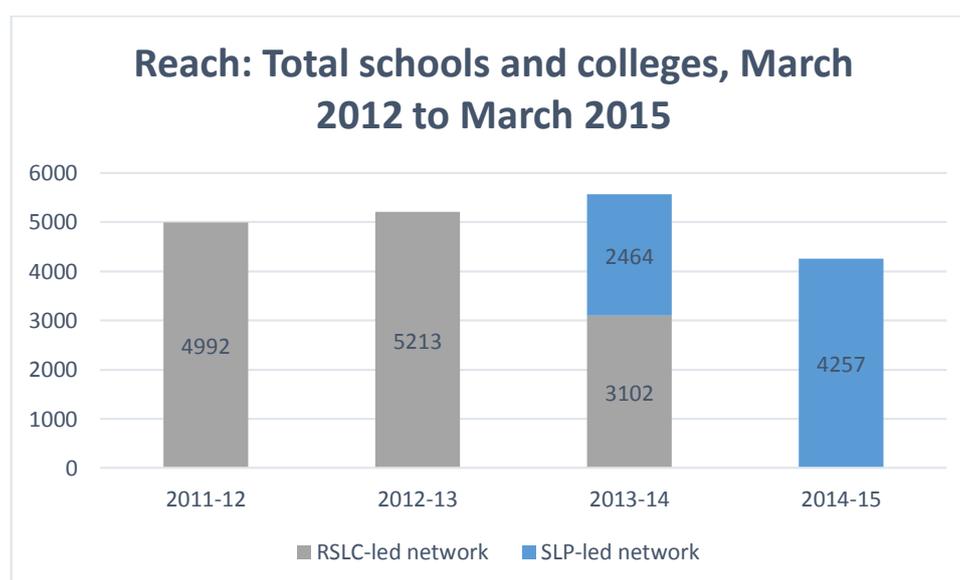
achieved. Nevertheless, the chart also shows a significant increase in the level of CPD that has been delivered in the first full year in which the SLPs have been operating (April 2014 to March 2015).

The chart also demonstrates one further point. The figures for final three full years of the RSLCs (2010-11, 2011-12 and 2012-13) show a percentage-point increase of 15% in the total amount of CPD support delivered. This suggests that, even in an established network, the reputation and reach of the network grow incrementally year on year, and that it can take time to rebuild this following a significant upheaval. By comparison, the new SLP-led network achieved a percentage-point increase of 165% in the overall levels of CPD delivered between April 2014 and March 2015. Of course, this should not be read as a direct comparison – a newly-established network has more scope or “head-room” for growth than a well-established one. Nevertheless, the data shows clearly the rapid increase in levels of delivery between April 2014 and March 2015 following the initial transition in 2013-14. We explore in chapter three what has helped to achieve these increases and the lessons that can be learned.

Of the 13,772 CPD units delivered between April 2014 and March 2015, 10% (1,370) have been delivered to so-called ‘priority schools’. These are schools identified as being eligible for specific science support, as agreed by MyScience with the DfE. Since the priority schools are able to claim intensive bursaries towards the cost of the CPD, some SLPs have used these to offer a more tailored, flexible and bespoke CPD to meet the needs of the school.

The SLPs are reaching more schools and colleges than they were in March 2014

Figure 1.3: Total schools and colleges the network has engaged

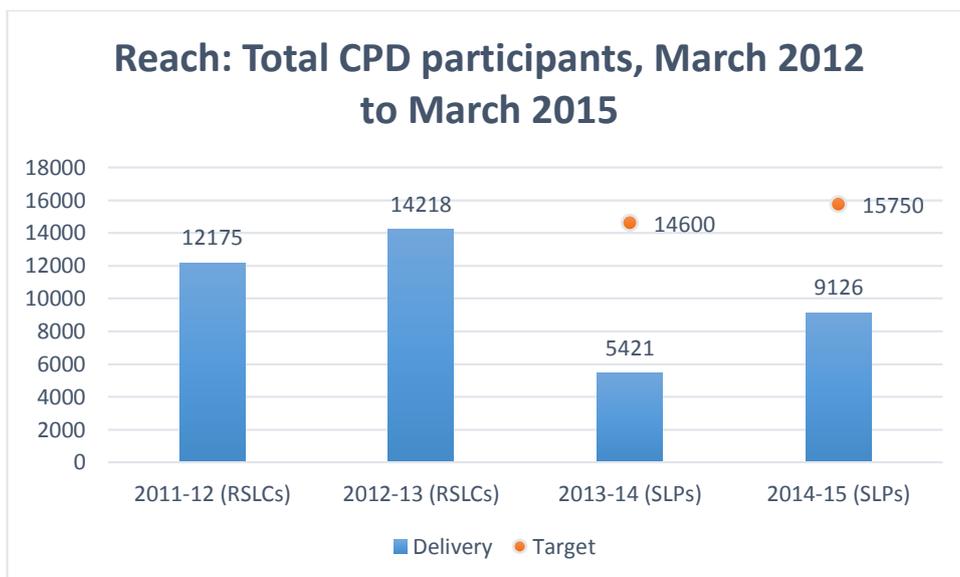


Source: Achiever

Figure 1.3, above, illustrates a similar trend to that seen in figure 1.2: in their first full year of operation, the SLPs have increased the number of schools and colleges they are reaching by 73% compared to the number they reached in 2013-14. Likewise, as figure 1.4 illustrates, the SLPs have also increased the number of teachers and technicians they have engaged in science CPD by 68% in the same period. Between April 2014 and March 2015, one in five schools and colleges in England engaged in CPD offered by the network. For secondary schools, the figure was two in three. These three charts, looking at overall levels of delivery and the network’s reach, all reflect the lesson that the transition from the RSLCs to the SLP-led network took longer than anticipated. Targets that were set on the

assumption that the SLPs would be able to sustain previous levels of delivery and reach in 2013-14 and then increase these in 2014-15 have not been met.

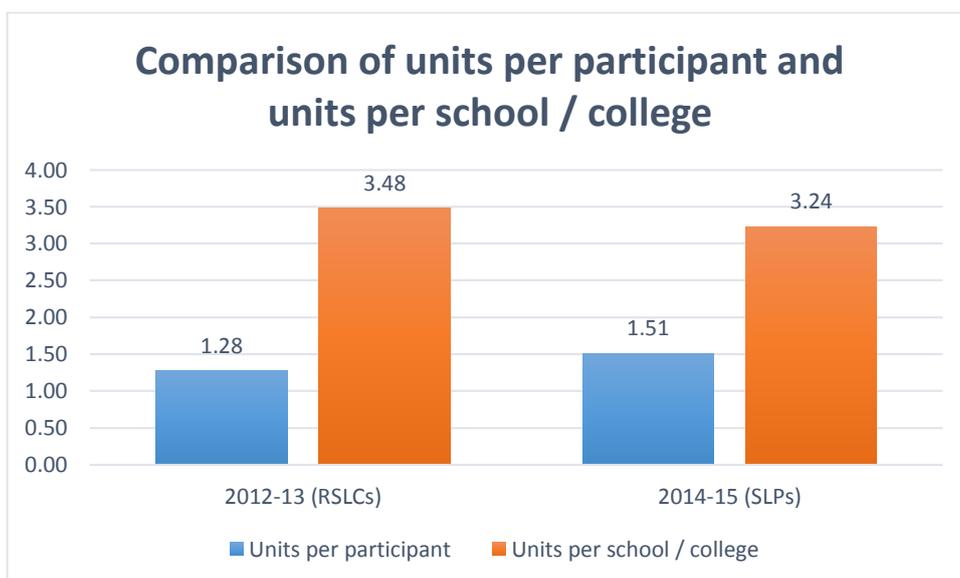
Figure 1.4: Total CPD participants the network has reached



Source: Achiever

The data on levels of CPD delivery, the number of schools and colleges reached, and the number of teachers and technicians that have taken part in the CPD also shows a subtle shift in the way in which the network is delivering CPD. The data in figure 1.5, below, shows that, compared to the final year of the RSLCs, the SLPs are delivering more CPD units per participant, but fewer units per school or college. This suggests that the SLPs are delivering more intensive forms of CPD than the traditional one-day external course. As we explain in chapter three, our fieldwork showed that the most effective SLPs were using the full range of CPD activities, including delivering bespoke CPD in schools and providing tailored consultancy support, rather than relying solely on offering external CPD courses.

Figure 1.5: Comparison of CPD units per participant and CPD units per school or college



Source: Achiever

These trends need to be set in the context of wider changes in the way in which schools are accessing external CPD

While these trends illustrate the way in which the network has established itself and increased its level of delivery, these achievements need to be set in context. Aside from local delivery, the network has got closer to but has not reached its delivery and reach targets. This reflects two sets of factors.

The first is that the transition from the centrally-led model under the RSLCs to a more schools- and colleges-led model took longer than had been anticipated. In August 2013, the network moved to a new regional structure, a new delivery model, and a new online booking platform, all at the same time. A significant amount of time during the first term of the new model – the autumn term of 2013 – was taken up by identifying and negotiating with prospective SLPs, establishing new partnerships, and setting up new systems. It is also the case that the RSLCs were an established presence locally, known by science teachers and technicians. It has taken more time than was anticipated to re-establish the presence and generate momentum for the new SLP-led network.

The second set of factors, however, relates to wider changes in the way that schools and colleges are accessing external subject-specific CPD. Our evidence suggests two trends are at work here.

- a. **Schools are less willing to release staff during teaching time** – SLP leads and science leaders in the schools we interviewed reported that this trend is being driven by school leaders wanting their staff to remain in classrooms and by staff wanting to remain with their classes, particularly those in Year 6 and Year 11, in order to focus on maximising attainment. Schools also reported that the cost of cover arrangements, in addition to the cost of the CPD, has made schools more cautious about sending staff on external CPD when they perceive that their budgets are under increasing pressure.
- b. **Schools are increasingly looking to in-house models of CPD as their main mode of CPD, as opposed to external subject-specific CPD courses** – the schools we interviewed for this research described how they are using models of joint practice development, action research, action learning sets, and lesson study to develop general pedagogical practice, and are only using external subject-specific CPD by exception when they do not have the expertise in-house.

There are lessons for members of the network that can be taken from both of these sets of factors, particularly the latter. The data on the schools, colleges and participants reached by the network suggests there has been a shift to more intensive, bespoke CPD. As we explore in more detail in chapter three, the SLPs that have been most successful are those that have recognised the changes in the way schools are accessing external CPD and taken a pro-active, tailored and flexible approach to engaging them. Before turning to that, however, we describe the way in which the network has sought to sustain the quality and impact of the CPD that it has delivered.

Chapter 2: What has been the impact?

In this chapter, we look at the impact of the CPD that has been delivered by the regional network. Drawing on Thomas Guskey’s model of evaluating the impact of CPD, we look in turn at the impact on:

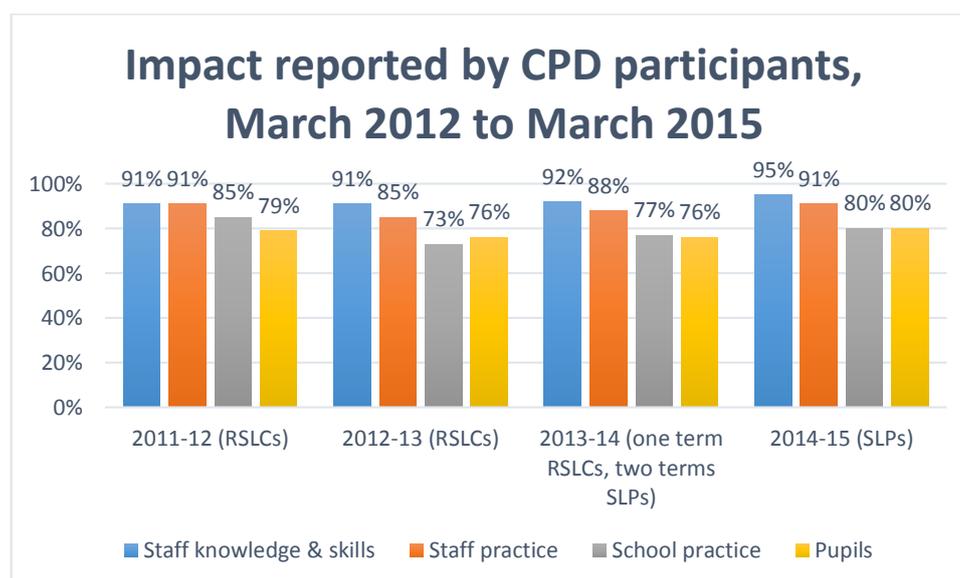
- teachers and technicians that have accessed the network’s CPD;
- their pupils’ and students’ engagement with science, progress and attainment; and
- their schools’ and colleges’ practice and attitudes towards subject-specific CPD.

The findings set out in this chapter are based on a combination of:

- data collected through the impact toolkit that captures the impact of CPD reported by participants six weeks and six months after the CPD has taken place;
- our fieldwork interviews with members of the network and 19 science leaders in schools that have accessed CPD from the network; and
- a survey of 52 CPD participants and 55 science leaders from schools that have accessed CPD from the network.

The network has sustained the quality of the CPD it offers and has exceeded levels of impact recorded during the final year of the RSLCs

Figure 2.1: Impact toolkit data showing impact reported by CPD participants



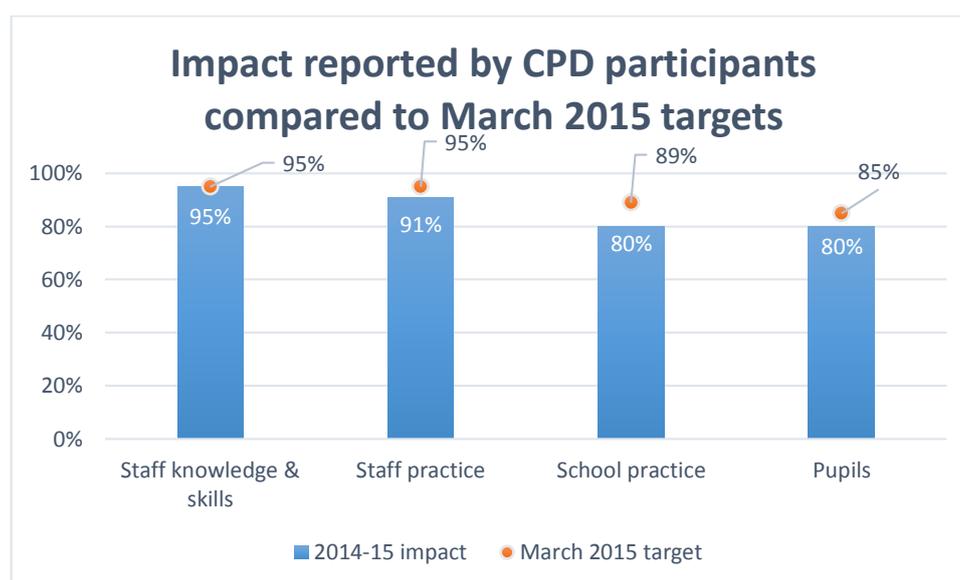
Source: Impact toolkit, March 2015

A key aim during the transition to the new model was to sustain the network’s reputation for high-quality science CPD and to increase the impact on staff, schools and pupils. Figure 2.1, above, shows that this has been achieved. The quality of the CPD, as measured by its impact across these four indicators, is not only consistent with that recorded during the final two years of the RSLCs, but has exceeded these levels in relation to staff knowledge and skills, on staff practice and on pupils. As of March 2015, nine in 10 CPD participants reported that the CPD they had accessed from the network had an impact on their practice, and eight in 10 reported that it had an impact on wider practice in their school or college and on their pupils.

Comparing this level of reported impact to the targets set out the outset of this phase of the regional programme, figure 2.2, below, shows that the network achieved the target for impact on staff knowledge and skills. In relation to staff practice, school practice and pupils, levels of reported impact fall slightly below the target levels. There has, however, been an increase across all four indicators of between 3% and 4% since March 2014.

It is a very significant achievement that, within five terms, the new network has exceeded the level of impact achieved by what was a well-established and mature delivery model. Given that one of the key areas of focus of the network's CPD is equipping staff with the skills to identify evidence of impact of CPD on pupils, as this becomes more embedded in staff practice, we would expect to see even greater reported impact on pupils and on wider school practice.

Figure 2.2: Impact toolkit data compared to March 2015 targets



Source: Impact toolkit, March 2015

Impact on teachers and technicians

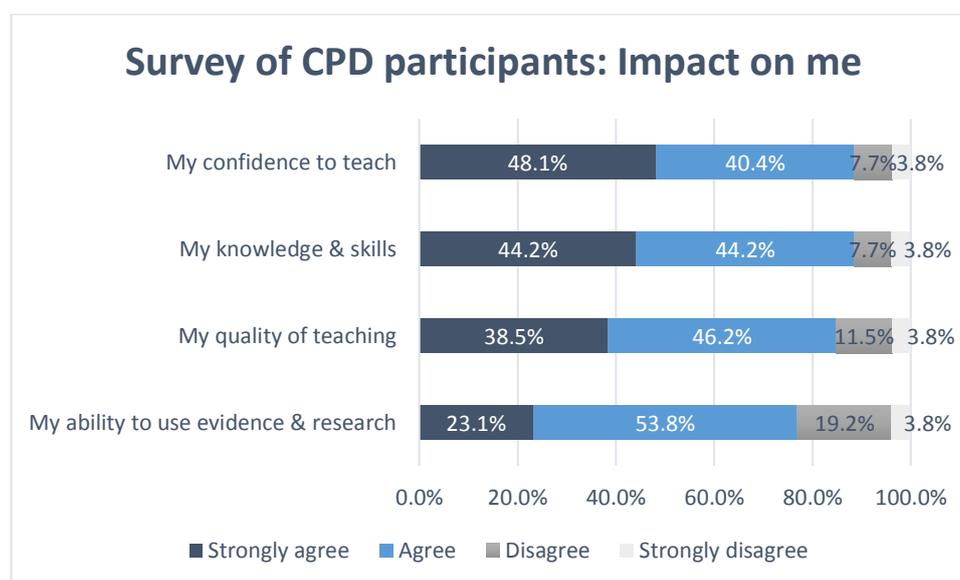
Figure 2.1 shows that, by March 2015, more than nine in 10 participants in CPD offered by the network reported an impact on their knowledge, skills and practice. This is a significant achievement, which we can place in context by comparing it to the levels of impact of CPD reported by teachers in the teaching and learning international survey (TALIS) carried out by the Organisation for Economic Co-operation and Development (OECD). In relation to the knowledge and skills of teachers, TALIS found that 50% of teachers in England and 66% of teachers in all participating countries reported an impact on their knowledge and understanding of their subject field. By comparison, the network's data shows 95% of participants reported an impact on their knowledge and skills. In terms of pedagogy, TALIS found that 45% of teachers in England and 59% of teachers in all participating countries reported an impact. The network's data shows 91% of CPD participants reported an impact of the CPD on their teaching practice.

The impact toolkit data is corroborated, first, by two parallel surveys that we carried out during the final phase of our evaluation: one for CPD participants (completed by 52) and one for school leaders of the schools that had accessed CPD from the network (completed by 55). Figure 2.3, below, shows that almost nine in 10 CPD participants (88%) reported that the CPD they had accessed had an impact

on their confidence to teach and their knowledge and skills. Over eight in 10 (85%) reported an impact on their practice, and over three quarters reported an impact on their ability to use evidence and research in the classroom (77%).

Comparable levels of impact were also reported by school leaders in a parallel version of the survey. This means that over nine in 10 of CPD participants and their school leaders reported that the CPD staff had accessed had an impact on the quality of their teaching.

Figure 2.3: Survey responses from CPD participants regarding impact on them



Source: survey data collected during phase four of our evaluation

This evidence of impact is corroborated by our fieldwork interviews with heads of science and science co-ordinators in schools. These science leaders to whom we have spoken were unanimous that:

- the CPD their staff have accessed has been of a very high quality;
- the CPD fulfilled their aims; and
- they would access CPD from the SLP again and recommend the CPD to colleagues.

These science leaders reported strong evidence that the CPD had had an impact on the staff who had taken part in the CPD, particularly in terms of improving their knowledge and confidence. These included examples of technicians growing in confidence and bringing new ways of setting up practical experiments back into school, and teachers having the confidence to teach new subject content or to teach what they already knew in a different, more engaging way.

Science leaders recognised that they would look for different forms of impact, depending on the type of CPD in which their staff had participated and the school's aims in accessing the CPD. For example, they would expect a specific set of outputs from CPD focused on developing the science curriculum or improving assessment in science, such as updated schemes of work or a new progression-planning and assessment framework. Where a member of staff had accessed a more in-depth CPD activity focused on improving science teaching across a whole department, they would look for outputs such as whole-school science INSET and outcomes specifically relating to improvements in pupil progress and attainment.

We found examples of schools accessing these and other types of CPD. Overall, all science leaders to whom we spoke reported very positively about not only the impact they had seen on staff confidence,

but also the impact they had found through focused lesson observations, book scrutiny and termly pupil progress tracking.

Standing out in science: Sacred Heart Roman Catholic School, Redcar

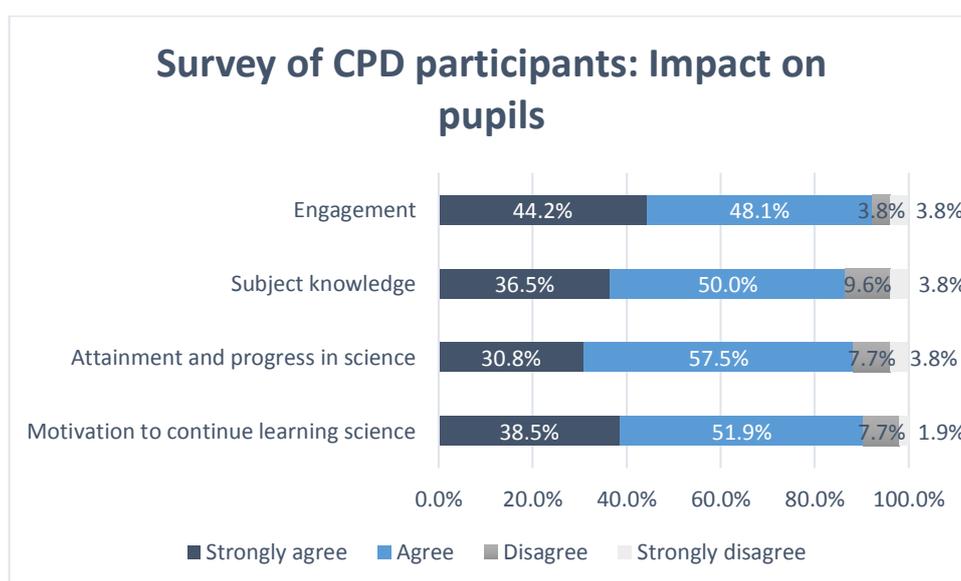
Sacred Heart is an 11-16 voluntary-aided school. One of the science teachers attended *standing out in science*, run by Carmel College & Framwellgate School SLP to develop her teaching and find new ways of engaging students – ‘you don’t always want just to *deliver* content to the students’. The programme involved working with science teachers from other schools to study, try and reflect on new techniques. Observing other teachers and being observed is built into the structure of the CPD. She found the way in which the CPD built up over time and was grounded in classroom practice really valuable. As a result, she said that she was more confident in her teaching. She says she has found her students are more engaged, are thinking more for themselves in lessons, and have developed better investigative and thinking skills.

What did the school say? ‘One of the best CPD events I have been on.’ Head of Science

Impact on pupils and students

The impact toolkit data in figure 2.1 shows that eight in 10 CPD participants reported impact on their pupils and students. This is corroborated by the data we gathered from our survey of CPD participants and school leaders during the final phase of our evaluation, as shown in figure 2.4, below.

Figure 2.4: Survey responses from CPD participants regarding impact on their pupils



Source: survey data collected during phase four of our evaluation

Figure 2.4 shows that more than more than eight in 10 CPD participants reported an impact of CPD they had accessed from the network across four indicators relating to their pupils. In terms of impact on pupils’ engagement and motivation to continue studying science, more than nine in 10 CPD participants reported on impact. School leaders were equally positive about the impact of the CPD on pupils in their school: almost nine in 10 (87%) reported an impact on pupils.

The evidence we gathered during our fieldwork further corroborates these findings. In around half of the schools to whom we spoke that had accessed CPD from the network, the science leaders were

confident in attributing impact on pupils to the CPD that their staff had accessed. Where this was the case, they reported two forms of pupil-level impact.

1. **Engagement in science lessons and beyond** – science leaders reported instances in which new ways of teaching science had created a ‘buzz’, excitement and enjoyment among pupils in their science lessons. They reported evidence of pupils being more engaged in lessons, staying on task, developing new investigative and team-working skills, and generating creative ideas. In some instances, science leaders reported that pupils’ enjoyment of science lessons was translating into interest in extra-curricular science, technology, engineering and mathematics (STEM) activities.
2. **Improved pupil progress and achievement** – some science leaders reported that the CPD that they had accessed had helped to improve pupil progress and achievement. This was particularly the case where the CPD was focused on particular groups of pupils (such as stretching the most talented pupils) or on supporting pupils to develop a specific set of skills (developing investigative learning or revision skills).

Building leadership capacity: St Dunstan’s Catholic Primary School, Birmingham

St Dunstan’s is a 3-11, Catholic, voluntary-aided primary school. The school worked with Bishop Challoner SLP to access CPD activities relating to the new curriculum, developing subject knowledge in physics, and becoming a subject leader. As a result, the Science Co-ordinator has seen a significant impact on teaching within the school. She recently observed one lesson on light in which the teacher, who had previously been less comfortable with the subject, was confidently facilitating pupils to carry out their own investigations using shadow puppets. She judged the lesson to be outstanding. In her own practice, the CPD has helped the Science Co-ordinator to take a more focused approach when scrutinising pupils’ books. As a result of the changes introduced in science, pupils are visibly more excited about and engaged in their science lessons: there is a buzz when they come to study science, and there is growing interest in extra-curricular science clubs, many of which are now over-subscribed.

What did the school say? *‘We have always found the science CPD offered at Bishop Challoner to be very good. We always come away enthused and “can-do”.’* Science Co-ordinator

Improving assessment in science: Blenheim Primary School & Children’s Centre, Essex

Blenheim is a 3-11, community primary school. Blenheim accessed the assessment and progression CPD from the SLP convened by the South-East Essex Teaching School Alliance (SETSA). Improving assessment in science had been identified as an area for development, and the Science Co-ordinator took part in the CPD and then used the learning to develop a new approach to planning the curriculum and tracking progress, with a greater focus on differentiation. This has led to more accurate assessment of pupils’ progress, and pupils, particularly the more able, making more progress over the course of the summer term 2014. The children themselves are also enjoying their science lessons more, especially the practical and investigative aspects of science, which staff are now more confident in putting on.

What did the school say? *‘The CPD we accessed was of a really high quality. For me, the value of this type of CPD is giving us access to cutting-edge developments in science.’* Science Co-ordinator

In the other half of the recipient schools to whom we spoke, the science leaders were less clear as to how they would collect evidence of impact of CPD on outcomes for pupils. In some cases, this related to the nature of the CPD that the school had accessed: if, for example, a member of staff had accessed CPD to meet a development need specific to them, science leaders would look for evidence of impact in the staff member’s practice, but would not necessarily focus on monitoring pupil-level impact.

In these cases, the “theory of change” the science leaders described was that high-quality science CPD would improve teachers’ confidence and skills, which in time would have a knock-on effect on pupils. They were less confident about attributing a direct link between the CPD and pupil progress, and were not in the habit of evaluating the impact of this form of CPD on pupils, or were not clear how they would do this.

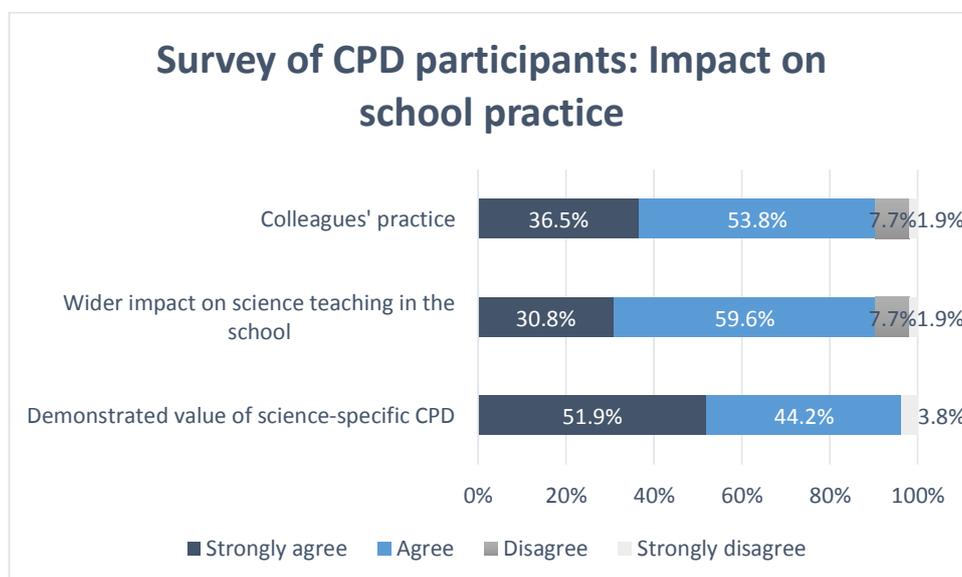
A key aim of the NSLN regional programme has been to embed and sustain a culture of evaluating the impact of subject-specific CPD in order to maximise its long-term effectiveness in the classroom. Within the network, the process of planning and reporting impact has been built into the structure of the CPD and the way funding for it is accessed. This process has been the subject of evaluations in its own right. We would add that the majority of members of the network reported that they saw the value of this process and considered that there being an explicit requirement to evaluate and report on the difference CPD had made in the classroom was key to maximising impact.

Over the course of our evaluation, the national operator, the regional consortia and the SLPs have made a concerted effort to re-emphasise the importance of the planning and reporting impact to CPD facilitators. This has been done to ensure that CPD participants gain confidence and skills in planning for and identifying the difference that the CPD has made in their classrooms.

Impact on schools and colleges

The impact toolkit data shows that eight in 10 CPD participants reported an impact on the practice of their colleagues and in their schools. These findings are backed up by our survey data, as shown in the figures 2.5 and 2.6, below.

Figure 2.5: Survey responses from CPD participants regarding impact on school practice

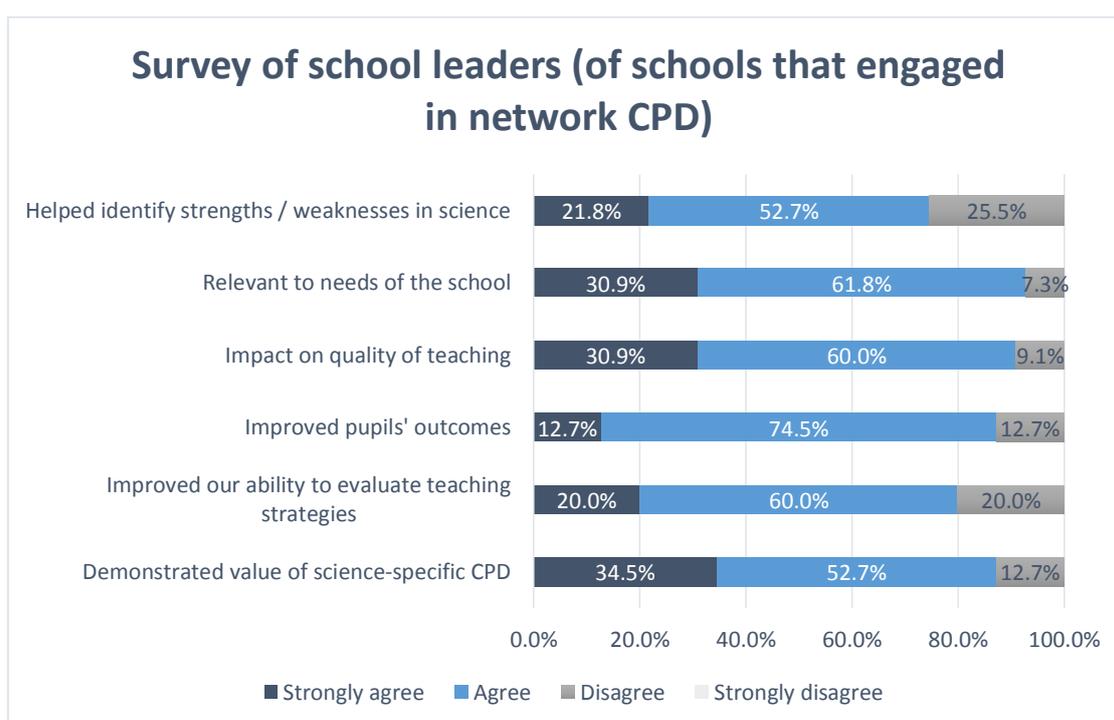


Source: survey data collected during phase four of our evaluation

Figure 2.5, above, shows that nine in 10 CPD participants reported an impact on their colleagues' practice and a wider impact on the teaching of science within the school. These levels of impact are also seen in the responses of school leaders, as shown in the figure 2.6, below. In addition to the responses on the quality of teaching and impact on pupils, we also asked both CPD participants and school leaders a question about whether the CPD they had accessed had demonstrated the value of science-specific CPD.

Fostering a culture of schools and colleges using science-specific CPD, and subject-specific CPD more generally, is one of the transformations the NSLN regional programme is aiming to affect. The survey data show that over nine in 10 (96%) CPD participants and almost nine in 10 (87%) school leaders considered that the CPD they accessed from the network had reinforced to them the importance and value of high-quality science-specific CPD as a tool for improving the quality of teaching and learning in schools and colleges.

Figure 2.6: Survey responses from leaders of schools that accessed science CPD from the network



Source: survey data collected during phase four of our evaluation

Our fieldwork interviews with science leaders in schools that had accessed CPD from the network enabled us to explore in more detail how the network's CPD was being used to shape wider teaching practices and attitudes to CPD in schools. We found that it was doing this in two distinct ways.

First, staff that accessed CPD brought back their learning and used this to shape department-wide practices. In all of the schools to whom we spoke, there was a strong expectation that staff would share their learning with their peers, although there were differences in how formal this sharing would be. In instances where staff had accessed CPD relating to the curriculum, assessment and practical experiments, there had been immediate outputs that had been shared with colleagues. In instances where staff had accessed CPD relating to leadership of a science department or whole-school approaches to science teaching, the sharing had been more gradual, with science leaders recognising that they needed to take time to embed new approaches and work with staff who needed support. In

these instances, however, the science leaders were confident that the CPD would have a more long-lasting, sustained impact.

Second, some science leaders reported an impact on their school's overall approach to subject-specific CPD. Admittedly, there were only a small number of cases of schools to whom we spoke in which the science leader said that the school was not generally supportive of subject-specific CPD. In these cases, however, the science leaders reported an improvement in the attitudes of senior leaders towards science and subject-specific CPD. In one school, the science leader reported how their experience of CPD had helped establish science as a priority in the school and demonstrated the value in having science teachers 'fired up' by new ideas and the latest, cutting-edge developments in the field.

Empowering pupils to lead scientific investigations: St Hugh's Catholic Primary School, Trafford

St Hugh's is a 3-11, Catholic, voluntary-aided primary school. The school accessed CPD on the curriculum and on working scientifically from the SLP convened by Altrincham Grammar School for Girls. Using what she had learned, the school's Science Co-ordinator then led a dedicated science INSET session in school, which staff said they found 'inspiring'. In lessons, her pupils have been given the scope to lead their own investigations. The results, she said, were incredible: 'I was amazed by the pupils' creativity, and the way in which they were working together. They were inspired and empowered.' She plans to use this to support her colleagues to adopt similar approaches in their lessons. The experience has helped to establish science CPD as a priority in the school development plan: senior leaders agree with the Science Co-ordinator that 'teaching and learning in science is far better when teachers are inspired.'

What did the school say? *'When children are given the opportunity to think independently, and when the teacher is not imparting knowledge all the time, this allows them to be really creative and come up with some great ideas. This encourages and empowers them to take more ownership of their learning.'* Science Co-ordinator

Where schools were already supportive of science and subject-specific CPD, science leaders reported that working with the SLP had reinforced this commitment, strengthened the relationship between the school and the SLP, or created a new theme of collaboration based around science.

Sparking pupils' curiosity: St Chad's Catholic Primary School, Birmingham

St Chad's is a 4-11, voluntary-aided primary school. Working with the SLP convened by Bishop Challoner, St Chad's has accessed CPD and school-to-school support focused on the curriculum, developing investigative approaches in science, and science leadership. Subject leaders and pupils across the two schools have worked together on topics such as the Earth in space and laser cutting. As a result, there is now a greater emphasis on enquiry-based learning in science in order to spark and sustain pupils' curiosity. According to the outgoing Science Co-ordinator, 'pupils love science' – they write a monthly newsletter describing what they have been doing in science – and are making greater progress in science as a result. She has also been trained by Bishop Challoner to deliver science CPD and designated as a specialist leader of education (SLE). Science CPD leaders at Bishop Challoner also encouraged St Chad's to work towards the Primary Science Quality Mark, and they were awarded "gold" as a result of their work with the SLP.

What did the school say? *'Advice and ideas about science is right at our fingertips! The CPD we have accessed has been a huge and powerful part of my and the school's journey.'* SLE and outgoing Science Co-ordinator

Chapter 3 – How well has the network operated?

As the preceding chapters show, in the course of the first five terms that the new network has operated, a significant amount has been achieved. First, an entirely new regional structure, delivery apparatus, and supporting systems have been put in place. Second, while there was a dip during the transition in 2013-14, there has been a significant increase since then in the schools and colleges reached and overall levels of CPD being delivered by the network. Third, the network has managed not only to sustain, but also to exceed the levels of impact reported during the final year of the RSLCs.

Having described these achievements in the previous two chapters, in this chapter we turn to two further questions. First, we explore how this has been achieved, focusing specifically on identifying what has worked effectively, the challenges that have arisen, and areas for further development. Second, we evaluate how well the network has operated during this period. To answer these questions, we have structured this chapter around four key functions that a national CPD network needs to perform effectively. These are to:

1. establish a presence and maintain the brand of the network;
2. build sufficient regional and local capacity to deliver CPD;
3. recruit to and deliver CPD; and
4. gather feedback, ensure quality and impact, and sustain the network.

Function 1: Establish a presence and maintain the brand of the network

The majority of SLPs have established their presence and reputation as providers of high-quality local science CPD, and the network is recognised by education leaders and ministers at a national level. During our final phase of fieldwork (autumn term 2014), one year into the new regional structure, we found that SLPs were more confident about the strength of their partnerships and their capacity for future delivery. The majority of SLPs had constructed effective relationships with local schools and colleges, had built and were expanding local networks of schools, and had established a reputation as a hub for local science CPD.

Where SLPs were in a strong position in terms of having established their reputation and developed local networks, one of the key factors had been taking a pro-active and persistent approach to communications. Many of these SLPs had used large launch events to announce their presence, establish the partnership, and develop a network of contacts with whom to work to identify opportunities to offer CPD. Other SLPs recognised they had “missed a trick” in not taking this approach initially. It is to the credit of the network that the importance of these events, and the communications that follow, has been identified as good practice and shared across the regional consortia. Some of the SLPs to whom we spoke during the autumn term 2014 who had not initially launched the SLP had started to “re-launch” their SLPs with events that term. They reported these had received a positive response from local science leaders.

Some SLPs that are part of established networks, such as teaching schools, recognised the value of these networks in their initial launch and ongoing communications. Other SLPs have had less prominence within the teaching school alliances. Again, through the sharing of effective practice within the regional consortia, we found examples of SLPs that had renegotiated their relationship with the teaching school to maximise and build on their respective networks, ensure that science CPD was seen as a key pillar of the alliance’s CPD offer, and train science SLEs.

While the network has taken strides to establish itself nationally, regionally and locally, we identified three key challenges for the network to continue to address in order to sustain and enhance the brand of the network and of individual SLPs.

- 1. There is not yet consistent recognition of the network nor of the SLPs.** While many SLPs report that they are now well-established, there is consensus that the initial communication about the transition from a network led by RSLCs to one led by SLPs did not reach the majority of school, college and science leaders. There remains work to be done to establish the brand of both the network as a whole and the SLPs individually. However this is done, it is crucial that national communications establish and reinforce awareness of the network and the role of the SLPs, so that the SLPs are able to draw on both the national brand and their own reputation when marketing their CPD offer to local schools and colleges.
- 2. Co-ordination between national, regional and local marketing of the network and its CPD offer is not as effective as it could be.** During our evaluation, there has been a growing focus on building capacity and skills to market CPD effectively. In some regional consortia, staff have been recruited to co-ordinate marketing and train SLPs in how to market their CPD offer effectively. Not all regional consortia have done this however – those that have not are largely reliant on national marketing. This suggests that there needs to be clearer expectations about the respective roles of national, regional and local marketing. Throughout the evaluation, there has been an improvement in the way in which national, regional and local marketing have worked together. The aim has been for national marketing to raise the profile of the network and remind them that they can access high-quality science CPD from their local SLP. While there have been improvements, the level of co-ordination is not yet as effective as it could be. SLPs specifically identified the importance of more strategic planning of national marketing, of receiving advanced notice of national marketing activities (so that they could capitalise on this locally), and of swifter responses from the national marketing team.
- 3. SLPs need ongoing support in identifying science leaders within their local areas in order to expand their networks.** Many SLPs have drawn on their existing networks to recruit participants to their CPD activities. The demand for science CPD within these networks is not limitless, and SLPs recognise that their long-term success depends on forging and sustaining new partnerships with decision-makers and science leaders in other schools and colleges. We understand that work has been undertaken to collate and share contact details of science leaders in local schools and colleges so as to help SLPs create new connections.

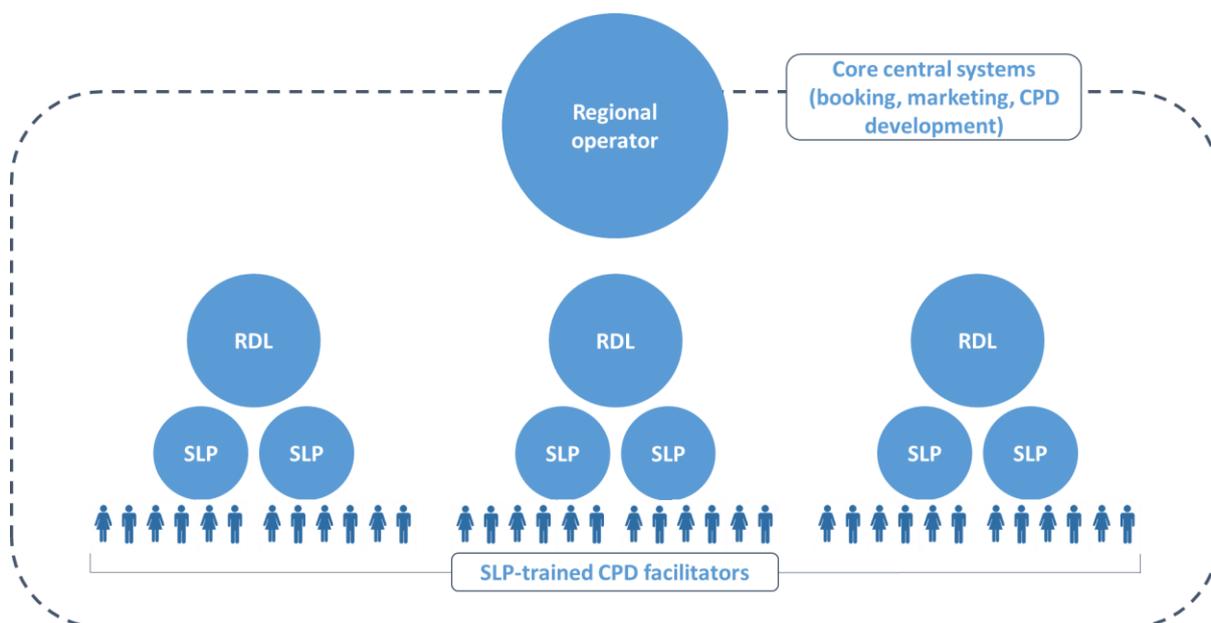
Overall, therefore, most SLPs have established a presence and brand in their localities, but there will need to be even greater co-ordination of national and local marketing, and support for SLPs to identify prospective partner schools and colleges, if the network's reach is to be sustained and expanded.

Function 2: Build sufficient regional and local capacity to deliver CPD

Between August 2013 and March 2015, the network built new capacity to deliver science CPD support regionally and locally. By March 2015, five new regional consortia and 51 new SLPs had been established as local hubs of expertise from which schools and colleges can access science CPD. These SLPs have trained many current teachers and technicians to lead and facilitate CPD with their peers, further enhancing the capacity of the network.

In this section, we explore in turn how effectively each the key roles within the network, as shown in figure 3.1 below, have been performed during the first five terms of the network's operation and the key factors where they have been fulfilled effectively.

Figure 3.1: Key roles within the regional network



The regional operators

In many education systems around the world, an intermediate tier, between the central strategic decision-makers and local delivery, has played a key role in co-ordinating activities, implementing changes, disseminating information, gathering feedback, and building leadership capacity. The regional operators have played this vital role in the development and operation of current phase of the NSLN regional programme.

The regional operators have performed important roles in setting up and sustaining the network effectively, including drawing on lessons of what has worked well to shape their consortia and plan strategically for their regions. The vast majority of the SLPs are led by schools and partners who are committed to improving science teaching and learning locally and are well-connected to education system leaders and established schools-led networks. This is a reflection on the effectiveness of the regional operators in targeting the right science leaders to lead SLPs. The role of the regional operators has now shifted to focus more explicitly on building capacity and leadership, so that the SLPs and RDLs can play a greater role in leading their regional consortia and developing new CPD activities.

We have identified three key aspects of the regional operator role that all regional operators are performing effectively.

1. **Co-ordination and planning of CPD activities** – to fill gaps and avoid inadvertent clashes in CPD scheduling. There were initially some scheduling clashes between SLPs in the same region, which led to some CPD activities having to be postponed or cancelled. All of the regional operators acted on feedback about this, and have taken a more pro-active role in planning CPD schedules strategically at a regional level in order to avoid scheduling clashes and maximise the recruitment of participants.

2. **Being an effective channel of communication** – ensuring the SLPs are aware of national policy developments, but also acting as a voice for the SLPs in raising suggestions or questions at a national level. All of the regional operators are performing this role effectively, gathering feedback from their consortia and sharing this with the national operator, and disseminating information and advice from the national operator to inform local practice.
3. **Sustaining the regional consortia** – identifying gaps in geographical coverage and commissioning a new SLP to fill that, or working with SLPs where key staff move on to ensure succession and continuity. The latter has been required in a small number of instances already, and demonstrates the importance of regional oversight to avoid the risk that changes within SLPs lead to schools and colleges in a local area not being able to access the science CPD that they need. In two regions, the regional operator very deliberately named the SLPs after the geographical regions that they covered. This proved effective for two reasons. First, it gave the individual SLPs and the consortia a clear sense of the geographical coherence and coverage of their region. Second, it signalled the intention was to have a broad and deep partnership in which responsibility was shared between equal partners, rather than being dependent on a single lead school or college. The regional operators have also been able to use the evidence of effective practice to determine which institutions they commission to lead SLPs over the next 12 months.

There are two other important aspects of the role of the regional operator that we have identified. These aspects are more developed in some regions than in others.

1. **Back-office functions** – this includes supporting the administrative functions of the consortia, such as regional-level marketing, collating impact forms from schools for each SLP, gathering contact details for local science leaders, and training SLP leads and staff in how to use the booking system and in marketing. Some regional operators have recognised that not all schools are experienced and skilled in scheduling and marketing CPD, and have offered training to SLP staff in how to do this effectively. One regional operator has also appointed someone to co-ordinate regional marketing, to support SLPs and to supplement national and local marketing. Where regional operators have taken a more pro-active approach to supporting SLPs, this support has been valued highly by the SLPs.
2. **Developing CPD tailored to the region and informed by the latest developments in national policy or scientific research** – as the network has become established and the regional consortia more mature, regional operators have been considering how they can enable members of their consortia to take a more active role in shaping priorities and developing new CPD activities for their region. The focus between August 2013 and March 2015 has rightly been on establishing the network and effective CPD delivery. There are, however, examples of regional consortia beginning to develop more collaborative ways of working within their regions. In the South West region, for example, the RDLs in the consortium have come together to develop a new CPD programme for A level science, as described in the case study below.

Developing new CPD activities collaboratively: The South West regional consortia

The South West regional consortia identified that there was a need for CPD to support local schools in preparing for changes to A level science assessment that was not being met by the core programme. To address this, the RDLs across the region worked together to plan a new A level science CPD offer to local schools, drawing on their collective expertise in leading science in schools and higher education institutions, and in delivering CPD in schools-based and university environments. They stress that the offer to A level science teachers is not just to come on a course, but to have the opportunity to network with their peers, reflect on practice and enable informed decision-making. The new A level CPD has run five times so far, reaching 150 participants, and the regional consortia noted that it had been successful in engaging schools that had not previously been involved with the SLPs and their networks.

The regional development leads (RDLs)

While the regional operators have helped to establish the SLPs and have provided some ongoing training and support, their role remains a strategic and co-ordinating function. They are not in a position to support the SLPs on a day-to-day basis. This role has been played by the RDLs.

It is difficult to underestimate the importance of the RDLs during the transition to the new regional model. All SLPs to whom we spoke commented strongly on the importance of the RDL role in the development and operation of their partnerships. They have played a vital role in supporting the SLPs to establish their partnerships and begin to deliver science CPD support. In many instances, RDLs have played a direct role in brokering CPD activities with prospective schools and colleges, and in delivering science CPD on behalf of the SLPs. It has been beneficial to the new SLPs and the network as a whole that many RDLs have a background in facilitating science CPD and work on other science CPD activities, such as the triple science support programme.

Not all RDLs have interpreted and performed the role in the same way. In some regions, the RDLs have been more involved in the administrative side of planning and organising CPD delivery. In other cases, RDLs have played a dual role of, on the one hand, providing external quality-assurance for the regional operator, and, on the other, working within the SLP as a specialist science CPD broker. In a small number of cases, the same person has fulfilled the SLP lead and RDL role. Nevertheless, overall, we have seen the role of the RDL develop from the original concept of a more traditional support-and-challenge role to more of a “specialist CPD broker”.

In the context of a more schools-led approach to CPD delivery, the role of the RDL, as someone who can be more outward-facing and pro-active in engaging local schools and colleges and can broker CPD activities for the SLPs, is crucial. We have identified three key features of the RDL role.

- **Specialist knowledge** – RDLs need subject knowledge to be able to engage science leaders and decision-makers effectively, identify the science CPD needs of a school or college, and develop a tailored package of support to meet those needs. Having the time of an RDL with these skills has been valuable to all SLPs, but especially those SLPs that have expertise in building networks, but not necessarily in delivering science CPD specifically.
- **Pro-activism** – RDLs need to be pro-active and have time to devote to outward-facing engagement with prospective partners. RDLs’ involvement in other science CPD activities, such as the triple science support programme, and their existing networks and contacts in local schools and colleges, has meant that they are often able to identify prospective partners and

CPD delivery opportunities for SLPs. Having a dedicated amount of time to support each SLP also enabled them to be pro-active in terms of engaging key decision-makers and science leaders in those schools. This has been crucial in brokering more intensive, bespoke CPD and consultancy support. Likewise, this has been particularly important for SLPs led by school leaders or teachers, who may have limited time away from the classroom to devote to pro-active engagement of decision-makers and science leaders in prospective partner schools and colleges.

- **Build capacity** – RDLs need to be in a position to encourage SLPs to develop new partners and to build their skills and capacity. This includes enabling the SLPs to offer the full range of science CPD activities, including bespoke and consultancy CPD support. It also includes embedding feedback loops and evaluative practices. Lastly, it includes coaching and mentoring new SLP-trained CPD facilitators.

The main challenge that the RDLs have faced has been the different starting-points of the SLPs in terms of their experience in marketing and delivering CPD, their specialism in science, and their capacity and confidence in building partnerships and networks. This, in turn, placed a premium on the skills of the RDLs in terms of supporting the SLP to build capacity within the partnership, and to identify and broker CPD activities. The most effective RDLs have been able to coach and mentor SLP staff in order to build their confidence and skills to take on a more direct role in engaging decision-makers and science leaders in local schools and in developing an offer of bespoke and consultancy support, as well as external courses. To reflect this, the network has now agreed that the role of the RDL should focus explicitly on strategic engagement with local science leaders, coaching and mentoring SLP leaders and school-based CPD facilitators trained by the SLPs, and embedding effective evaluation routines. This should ensure greater consistency across the network and enhance the reach, effectiveness and capacity of the SLPs.

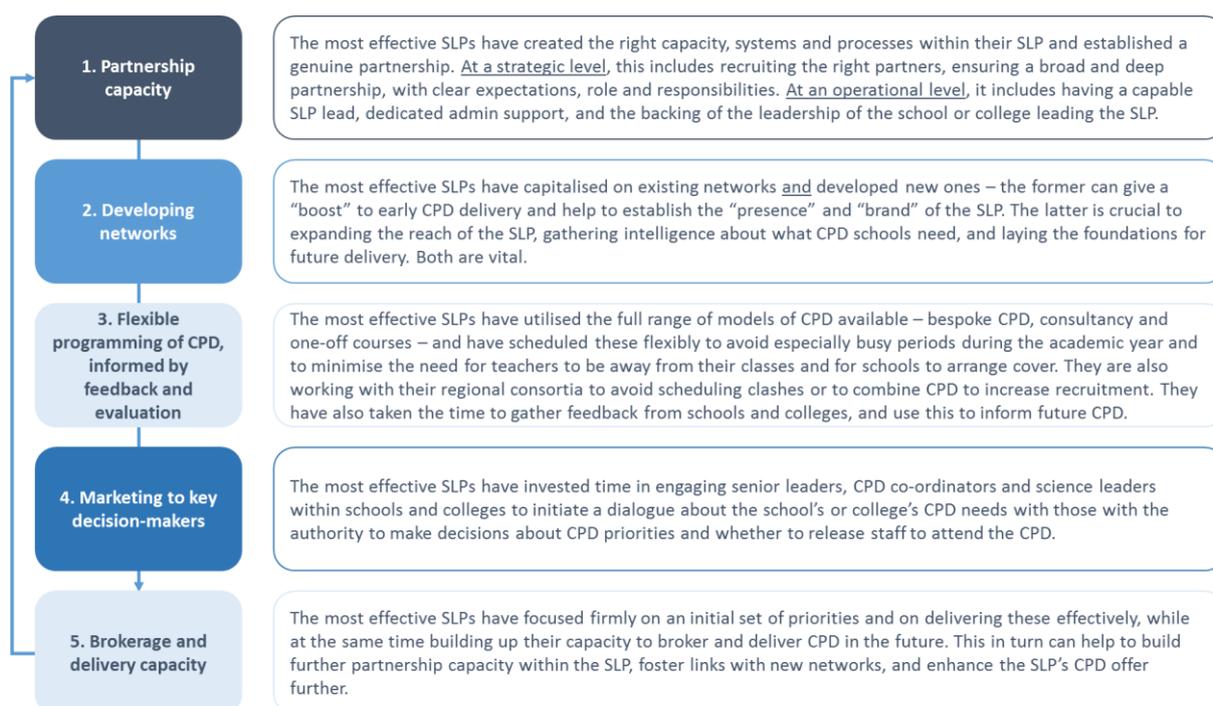
The science learning partnerships (SLPs)

The SLPs are the beating heart of the new regional network. The vision is one of schools and colleges, in partnership with higher education institutions and other local experts, acting as the leaders of local science teaching and learning. The strength of SLPs is that they have the potential to harness the expertise of current teachers and technicians in supporting their peers to develop their own practice.

The SLPs had very different starting-points however – some had previous experience of delivering CPD or working with the RSLCs, others did not – and some have enjoyed greater success than others. Where SLPs have been effective in establishing their partnership, delivering CPD, and expanding their networks, we have identified five key factors in their success.

These five success factors are represented in figure 3.2, below. We have represented these success factors in a cycle to reflect the fact that they are mutually reinforcing and are relevant for SLPs as they continue to develop.

Figure 3.2: Five key success factors of effective SLPs



As we note in figure 3.2, the most effective SLPs have utilised the full range of CPD support, including bespoke and consultancy support. The example of CPD facilitated by Adfecto, below, is a good example of the way some SLPs focused initially on building their reputation for high-quality science CPD by working on a tailored CPD offer with priority schools.

Tailor-made CPD: Farmor’s School, Gloucestershire

Farmor’s School is an 11-18 academy in Fairford. Through an initial discussion with the SLP led by Adfecto, the school identified and designed bespoke CPD to focus on A level chemistry and whole-department teaching and learning. ‘We were really involved in the design of the CPD, and it was tailor-made for our requirements’, said the Head of Science. Adfecto facilitated CPD for A level chemistry teachers and for the three heads of subjects. Staff were able to reflect on their approach to improving practice, planning work, and observing lessons. Colleagues found the CPD stimulating and useful, and have developed plans to implement what they took from the CPD during the next academic year. Impact will be tracked through lesson observations on the quality of teaching and progress in specific subject areas.

What did the school say? *‘Adfecto would be my first port-of-call for whole-department INSET in future.’ Head of Science*

A small number of SLPs with whom we worked also described their role not only in terms of improving science teaching and learning through CPD support for existing staff in their networks, but also in terms of identifying and recruiting future generations of world-class science teachers and leaders. These approaches will not only benefit the individual school or schools that lead the SLP, but will also add to the capacity of the SLP and enhance its ability to play a leading role in shaping local science CPD.

Building primary networks: Carmel & Framwellgate SLP

Carmel College is an 11-18 Roman Catholic academy, is part of a large multi-academy and leads a large teaching school alliance. Framwellgate School is an 11-18 academy, and is co-located with and manages the former RSLC. Their SLP covers Durham, Darlington and surrounding areas. The collaboration combined Carmel's teaching school alliance with the facilities of the former RSLC at Framwellgate, which the schools saw as an opportunity to recruit and develop science teachers and leaders. The SLP leads recognised that it would be vital to their long-term success to expand their reach and develop networks of primary schools. They began by identifying schools within their catchment areas, taking time to meet their science leaders, and then establishing regular network meetings. This has helped to identify CPD priorities and schedule courses that meet the needs of local primary schools. Uptake from primary schools has been strong and is increasing, and to date the *standing out in science* CPD has run twice. Feedback suggests this has had a transformative effect on the practice of both primary and secondary science teachers.

Where SLPs have been less successful, few of the five success factors outlined in figure 3.2 have been put in place. In these instances, the SLPs have not developed deep partnerships, nor have they been pro-active in building networks. Moreover, they have tended to rely predominantly on scheduling external courses rather than developing a range of CPD activities, including bespoke and consultancy support.

It is clear that SLPs need broad networks, delivery capacity, and a range of specific skills in order to sustain CPD delivery. The theme of capacity flows through each of the five success factors we have identified in figure 3.2. A key challenge for SLPs is building and sustaining sufficient and effective capacity to fulfil these roles. As one SLP lead said to us, 'a successful SLP needs to be a co-operative hub, not a sole trader.'

The concept of a co-operative hub encompasses not only having the right capacity overall, but also the right blend of skills for the partnership to be effective. Many SLP leads to whom we spoke recognised that school staff do not necessarily have experience of scheduling and marketing CPD, nor do their schools have large networks that can generate the sort of demand for CPD that SLPs will need to sustain themselves. One SLP estimated that few schools have a network of more than 10 schools. As such, SLPs will continue to need to access additional capacity to do their outward-facing work, particularly brokering networks, partnerships and CPD opportunities, as well as managing the day-to-day running of the partnership and delivery of scheduled CPD activities. To date, many SLPs have relied on the RDL to undertake this vital outward-facing, network-building role.

In our in-depth work with SLPs and our interviews with regional operators and RDLs, we considered specifically whether any particular model of SLP was more likely to have the right capacity and to have put in place effectively some or all of the five success factors outlined above. For example, we looked at whether SLPs led by teaching school alliances were more effective than SLPs led by other types of organisation.

We found that larger teaching school alliances, multi-academy trusts, and other established schools-led CPD providers (such as schools-owned, non-profit companies) had potential advantages in this respect. SLPs led by these organisations are more likely to have an outward-facing vision, an established brand and track-record of delivering CPD, existing networks of schools with whom they work, and dedicated administrative support. We found specific examples of strong partnership-working between the SLPs and the teaching school alliances within which they operated. These included teaching schools that had trained and designated CPD facilitators within the SLP as SLEs,

which increased the SLP's capacity for undertaking bespoke CPD and school-to-school support. We found other examples of SLPs that had brought together a number of teaching school alliances, thus combining and expanding the reach of each alliance's individual networks and enhancing their collective capacity to deliver science CPD.

Building partnership capacity: STELLAR SLP

STELLAR stands for the **S**cience and **T**echnology Partnership in **L**eicester City, **L**eicestershire **a**nd the **S**urrounding **R**egions. STELLAR is convened by Forest Way School, a 3-19 special academy and teaching school. From the outset, STELLAR considered that the key to being a successful SLP was for it to be a genuine partnership, not just one in name where all the work fell to one lead school. The first partners were Ashby School and Thomas Estley Community College, which ensured that the SLP could draw on a wider range of networks, partnerships and alliances. Since then, STELLAR has sought continually to expand their partnership. Leicester University and the National Space Centre have joined providing the SLP with expertise and access to facilities. The Kettering Science Academy has increased STELLAR's coverage of north Northamptonshire, and STELLAR have also developed a primary hub and trained the lead as a SLE to deliver the *cutting-edge science* programme. By March 2015, 234 teachers and technicians have accessed CPD from STELLAR.

Nevertheless, we also found instances where the work of the SLP was not integrated within the teaching school alliance, but was separate from it. In these cases, the SLP had not been able to capitalise on the teaching school alliance's network and brand, nor had the SLP been used to enhance the alliance's subject-specific CPD offer.

We also considered whether there were any implications in terms of funding and financial viability of SLPs being led by particular types of institution. As well as the leadership and delivery capacity, financial viability is vital to ensuring that the SLPs are able to build capacity and sustain local science CPD support. We found that many SLPs were receiving a significant amount of in-kind support from the institution that led the SLP, over and above the funding that the SLPs received. In many cases, some staff time, overheads, and back-office costs (IT, telephones and office space) were being covered by the host institution (e.g. the teaching school alliance), rather than directly from the SLP's funding.

This is a potential strength of the network – namely, the commitment of its leaders and its links to established CPD providers such as teaching schools and schools-led companies. Some SLPs also reported that this was a potential risk, particularly if the SLP became overly dependent on the efforts of a single lead, or on being able to draw on the capacity and support of a teaching school alliance. While we have found isolated examples of this occurring, instances are rare. More common are examples where the SLP and teaching school or schools-led company are complementing their respective offers, and adding capacity and reach to both. Looking ahead, particularly as SLPs grow and expand their reach, it will be important to continue to gather feedback about the ways in which SLPs are using their funding and in-kind support to build their capacity and sustain their partnerships.

We concluded, therefore, that to be successful, a SLP needs to be led by an organisation or organisations that can bring in active partners, can identify the right people to lead its day-to-day work, and have sufficient capacity to identify, broker, and deliver the CPD local schools want. Established and well-run teaching school alliances and other schools-led partnerships may have some of these success factors in place already. In these respects, they certainly have advantages over SLPs led by individual schools or colleges. The success of a SLP, however, depends on more than the type of organisation(s) in which the SLP is based.

SLP-trained CPD facilitators

If the SLPs are at the heart of the regional network, the CPD facilitators that they train and deploy are its lifeblood. One of the greatest potential strengths of a schools-led model of science CPD is that the person leading the CPD can say, 'I did this with my Year 9 class last Tuesday'. In other words, it can help to ensure that CPD remains connected both to cutting-edge science research and to innovative classroom practice.

The *leading and delivering effective professional development* is the course through which the SLPs and regional delivery centres recruit and train school- and college-based CPD facilitators. The data shows that *leading and delivering effective professional development* has been run 74 times between August 2013 and March 2015, reaching 780 teachers and technicians who have been trained to facilitate science CPD. Through this, SLPs are developing a cadre of SLP-trained CPD facilitators and building local capacity to deliver schools-led science CPD support.

Training staff to deliver science CPD: Thomas Estley Community College, Leicestershire

Thomas Estley is an 11-14 academy and a partner in the STELLAR SLP that covers Leicestershire, Leicester City, and north Northamptonshire. An experienced science teacher and a technician from Thomas Estley attended STELLAR's *leading and delivering effective professional development* programme. They described the impact of this CPD as very high, in terms of improving staff confidence and skills, not only in leading CPD, but also in their own classroom practice. STELLAR colleagues have fed back in extremely positive terms about their skills in leading CPD, and both members of staff are now leading in-school CPD and planning to lead STELLAR courses next year.

What did the school say? *'It is really important to Thomas Estley Learning Alliance to have staff who are trained up and confident to lead high-impact CPD – I am very pleased that this programme has helped two members of staff to achieve that.'* Vice Principal

Deploying SLP-trained CPD facilitators: The Cambridge & Peterborough (CaPe) SLP

CaPe is a partnership linked to the Cambridge Area Teaching School Alliance. When it came to training and deploying CPD facilitators, they found there was no single magic ingredient, but rather a number of small steps that made the difference. They started by identifying a small number of individuals from those who had attended *leading and delivering effective professional development* and who seemed most keen to become CPD facilitators. They stayed in regular contact with them after the CPD, providing updates about forthcoming opportunities to deliver CPD and answering any questions that they had. Rather than identify courses for the new facilitators to observe and part-lead, CaPe used twilight sessions organised with local priority schools as a "training ground" for the CPD facilitators. This avoided the issue of courses that newly-trained facilitators were scheduled to lead being cancelled, and provided a more informal, small-group environment for them to hone their CPD facilitation skills. CaPe also paired up facilitators so that they could support one another in delivering the CPD, and reflect on each other's practice afterwards.

Where SLPs have been successful in training and deploying CPD facilitators, they have focused on identifying a small number of individuals, invested time in regular communication with their facilitators, and used small, practical steps to build up their experience. The case study from the Cambridge and Peterborough SLP, above, shows an example of such an approach. In this instance, using twilight CPD sessions to deliver bespoke CPD to local priority schools was crucial. With these

forms of CPD activities, there is less risk of these activities being postponed since they do not require teachers to be out of class during lessons. They also provided a less formal and more personal environment for CPD facilitators to hone their skills and build their confidence in facilitating science CPD.

Some SLPs, such as Holmes Chapel, have begun to explore how they might use external experts and SLP-trained CPD facilitators in a complementary way for different aspects of their local CPD offer. For example, they have started to consider how they could commission non-school-based CPD facilitators to run certain external courses, and deploy school-based CPD facilitators to run twilight and bespoke CPD that do not require the facilitator to take time off from their teaching timetable.

Building brokerage and CPD facilitator capacity: Holmes Chapel SLP, Cheshire & Warrington

Holmes Chapel is an 11-18 academy in Cheshire East. The school is a former specialist science college, and leads a teaching school alliance as well as the SLP. Having initially found it difficult to recruit to CPD courses, the SLP has adapted its model in order to build capacity and expand its reach. Specifically, the SLP has developed a hub-based model, establishing three distinct bases across Cheshire East, Cheshire West and Warrington to make it easier for science teachers and technicians to be able to attend locally-available face-to-face CPD activities. The SLP is focusing increasingly on bespoke CPD, and is taking a more targeted approach to identifying CPD opportunities. The SLP has trained teachers and technicians to facilitate CPD, and has two members of staff in one hub already running CPD activities and a technician and a SLE leading CPD in another. In addition, the SLP has employed a former local authority science adviser to work two days per week to undertake the outward-facing work of identifying prospective CPD participants and brokering opportunities to offer CPD.

The most effective regional consortia and SLPs have also recognised that the training is only the first step in developing effective schools-based CPD facilitators. In these instances, RDLs are working with newly-trained facilitators to coach and mentor them. Following discussion within the network, this has now been agreed as an explicit aspect of the role of the RDLs. As noted above, in some instances, SLPs with links to teaching school alliances had put forward the strongest of the CPD facilitators they had trained to become SLEs, so that they can undertake science-focused school-to-school support. There is potential to build on this to further enhance the delivery capacity of the new regional network.

While the majority of the SLPs reported that they have delivered the *leading and delivering effective professional development* course, they acknowledged that the deployment of SLP-trained CPD facilitators has been relatively gradual. As a result, the capacity of this crucial aspect of the new regional delivery arrangements has not yet been fully tested. Our evidence suggests that there are three barriers that SLPs have encountered.

1. **Time out of school** – as with recruiting teaching staff onto CPD events, where staff have been trained as CPD facilitators, it has provided difficult for some SLPs to secure their release from school and time away from their classes to lead CPD. Around half of the SLPs we spoke to reported that there was not always sufficient time for their facilitators to prepare for CPD activities.
2. **SLPs' difficulty in recruiting to CPD activities** – SLPs reported that postponing CPD activities, particularly external courses, had a knock-on effect on their relationships with school-based CPD facilitators. Specifically, this had two effects. First, postponing CPD activities reduced the opportunities for facilitators to be deployed and gain experience. Second, it made facilitators

and their line managers in school less likely to commit to release them from their teaching commitments in the future.

3. **Clear and consistent expectations on trained CPD facilitators** – the *leading and delivering effective professional development* course is free to attend for participants. The *quid pro quo*, however, is that those who benefit from the training are expected to use this experience to lead CPD on behalf of the SLP. There is now a set of consistent national expectations and an explicit accreditation route, which has been developed by the national operator working with some of the regional operators. This should help to ensure that those who attend the course understand what is expected of them in terms of facilitating CPD within the SLP, as well as within their own schools and networks.

Function 3: Recruit to and deliver CPD

In chapter one, we described that the network has achieved significant gains in its reach and its overall level of delivery in its first full year of operation, between April 2014 and March 2015. We also noted that, while the network has achieved its target for the proportion of CPD delivered locally, the levels of delivery and reach are below the targets set at the outset of the new regional programme. The most consistent challenge reported to us during the evaluation has been recruiting participants onto CPD activities. Regional operators, RDLs and SLPs alike have highlighted this as the biggest obstacle to increasing levels of delivery to meet targets. In this section, we describe what has been effective in increasing levels of delivery, and the factors that have made recruitment onto CPD activities a challenge for many SLPs.

Where levels of delivery of science CPD have been higher, there have been three important sets of activities that have been undertaken:

1. pro-active communication and network-building;
2. utilising the full range CPD activities; and
3. using funding effectively to support and encourage delivery.

Expanding the reach of the partnership: Norfolk & Suffolk SLP

The SLP is led by Bury St Edmunds County Upper School, which is a member of the Bury Trust and the West Suffolk All-through Teaching School Alliance. Initially, the SLP used a launch event and their existing networks to market and recruit to their CPD activities. They enjoyed early success by setting out clear expectations of partners in terms of using their expertise and networks to support the SLP. They recognised, however, their long-term success would depend on expanding their networks, and have found three vital ways of achieving this.

- **Smart, personalised marketing** – e-newsletters with clickable links to CPD activities and targeted, personal contact (face-to-face or by phone) with science leaders.
- **Using the full range of modes of CPD** – being prepared to adapt their CPD model, including building capacity to do 1-to-1 bespoke CPD and consultancy by working with the teaching school to train, designate and deploy SLEs.
- **Constantly expanding their partnership** – bringing on board representatives from local industry to host CPD activities and provide employers' perspectives on science teaching and CPD, or forming primary school clusters through which to deliver bespoke CPD.

In terms of pro-active communication, the example from the Norfolk and Suffolk SLP, above, shows some of the ways in which that SLP has sought to sustain and expand their networks in order to build partnership and delivery capacity. At regional consortia level, the most effective regional operators have helped SLPs by providing support, advice and training in marketing and communications, and disseminating examples of good practice.

In terms of utilising the full range of CPD activities, some SLPs have developed a broad menu of CPD options that are tailored to the needs of local schools and colleges. In these cases, the SLPs have started by focusing on delivering a small number of priorities – for example, bespoke CPD for priority schools – and have then built up their delivery capacity to meet growing demand for CPD and further broadened their offer.

The SLPs that have adopted these approaches recognised that they needed to focus initially on a small number of schools. In many instances, they did this by approaching priority schools and using the offer of an impact award, a bursary for which priority schools are eligible, to “get through the door” and begin a discussion with science leaders and school decision-makers. These SLPs also recognised that increasingly schools are accessing CPD through lesson study, joint practice development, and action research, and are more reluctant to release staff from their teaching timetable to attend external CPD, and have tailored their CPD offer accordingly.

An offer with something for all local science educators: Adfecto, Gloucestershire

Adfecto is a schools-led not-for-profit company, owned by the Gloucestershire Association of Secondary Headteachers, which offers CPD and support for schools. A key part of Adfecto’s work involves coaching and mentoring teaching staff and leaders in their day-to-day practice. As a SLP, they have built on this and used the core programme of science CPD flexibly to create a menu of *programmes* to meet the needs of local schools, rather than relying on traditional courses.

- **Conferences** – support and networking for newly-qualified teachers and science leaders.
- **Networks** – facilitating network meetings by working with local authority science leads and groups of school leaders.
- **Outstanding science teaching** – Adfecto developed a new six-month programme for science teachers to develop their classroom practice; 13 participants are on the first programme.
- **Bespoke CPD** – Adfecto have used intensive bursaries to begin a dialogue with priority schools and to develop bespoke CPD packages to support to departments within school.

By March 2015, Adfecto had exceeded their delivery targets. One head of science said of Adfecto’s CPD, *‘this was some of the best CPD the school has been involved with.’*

In terms of using funding to encourage delivery, we have found that regions that have made greater use of variable funding – linking funding to what is actually delivered – have seen a greater proportion of CPD delivered locally through the SLPs and have achieved or got closer to achieving their delivery targets. We should be cautious about placing too much emphasis on the link between funding models and levels of delivery: the regions that have linked SLPs’ funding explicitly to delivery have also been those in which many of the former RSLCs chose not to continue to be part of the network. In those regions, therefore, the task of delivering CPD fell to the SLPs from the outset. In the other regions, there was more of an established delivery infrastructure to begin with and the challenge has been more about enabling the SLPs to deliver a greater proportion of the region’s CPD.

Turning to the challenge in recruiting participants to CPD activities, we have identified three factors that have contributed to this.

- 1. Relying predominantly on external courses, rather than developing a range of CPD activities including bespoke and consultancy support** – not all SLPs are yet fully confident in using the full range of CPD activities, particularly bespoke and consultancy CPD support. Some SLPs have argued that they lack the capacity to do this. Many of these SLPs have, however, invested significant amounts of time in scheduling and marketing CPD courses that have subsequently had to be withdrawn or postponed due a lack of numbers. In these instances, it is not a lack of *capacity* so much as a lack of *confidence and expertise* to engage other schools and colleges in bespoke CPD. In some regions, the advice SLPs received initially from the regional operator was to schedule more external courses, many of which subsequently did not run. This suggests that, during the initial period after the network was established, there was a “schedule it and they will book” assumption in parts of the network. There is an important lesson that can be drawn here about the need to invest time in building relationships and networks. It is encouraging, and indicative of the way in which formative feedback has been used in many regional consortia, that during the final phase of our fieldwork many SLPs had reflected and acted on these messages. Many considered that they had “over-scheduled” CPD courses during their first year of operation, and that they would be focusing on planning fewer CPD events and engaging schools more pro-actively in the future.
- 2. Limited network-building activity** – as noted above, many schools-led SLPs have recognised that they do not have sufficiently large networks to generate the level of demand for CPD that they will need to sustain themselves. The most effective SLPs have taken deliberate and strategic decisions to build networks where there are gaps locally, such as for subject leaders or for local primary schools, or to forge links with existing networks, such as local headteacher associations. Where SLPs and RDLs have been least successful in overcoming their recruitment challenges, they have not been pro-active in identifying existing networks and key science leaders locally, in developing new networks, and in engaging decision-makers.
- 3. Initial difficulties with the booking system** – the booking system should enhance the brand of both the national network and the individual SLPs, so that prospective CPD participants can use the booking system to find CPD activities near them or from their local SLP. The other key test, suggested to us by many science leaders and CPD participants, is that the booking system should user-friendly enough for teachers and technicians to make a booking in five minutes between lessons. Particularly during the first 12 months of the new regional model, members of the network reported frustrations with the way in which some of the central systems, particularly the booking system, were operating. These frustrations reflected the transitional nature of the model and, in some cases, differing views of what needed to be consistent across the network and what should be left to local discretion. Nevertheless, they also reflected genuine concerns about issues with the central systems that were impeding recruitment and delivery of CPD support. During the autumn term 2014 and the spring term 2015, many improvements were made to the booking system, and the feedback we heard was positive about these changes. Nevertheless, continuing to gather feedback from CPD practitioners and testing whether the booking system is working as effectively as possible will be key to making small, incremental improvements to the effectiveness of this central system.

When the new regional model was first introduced, there were also issues about giving SLP leads access to up-to-date contact details of science leaders in the schools in their local areas and some

scheduling clashes that led to CPD having to be postponed. We understand that work has been undertaken within regional consortia to address both of these issues.

Overall, therefore, there is a strong story to be told about the way in which the network has increased its reach, delivery and impact in its first full year of operation. The most effective SLPs have been proactive in engaging schools and colleges and flexible in utilising the full range of CPD activities. The confidence and skills to do this, however, are not yet consistently embedded across all SLPs. Ensuring this is consistent will be key to continuing to increase the network's reach and the levels of CPD it delivers.

Function 4: Gather feedback, ensure quality and impact, and sustain the network

A key aspect of the NLSN regional programme is having a core set of central systems that support and facilitate local delivery across the network. As envisaged, these systems should help to avoid the duplication of functions, improve efficiency, and ensure the appropriate degree of consistency. The transition to the new regional model involved the introduction of a new set of central systems. Many members of the network to whom we spoke valued the idea of there being a core set of consistent central systems, and spoke positively about some aspects of them, particularly some of the very high-quality CPD resources. We have discussed marketing and booking earlier in this chapter: here, we focus on quality-assurance of CPD resources, and feedback, reporting and evaluation of impact.

In terms of the development of CPD resources, it is one of the strengths of the network that it has the scope to develop nationally-consistent, high-quality CPD resources, informed by cutting-edge research, and to tailor this to meet local needs. Many of the CPD resources, the so-called professional development experiences (PDEs), were valued highly by members of the network for this reason. During the evaluation, a challenge was highlighted that some of these resources could become out-of-date very quickly and that there was not an explicit process in place setting out which PDEs would be reviewed regularly. We understand this has now been put in place by the national operator. We also received feedback that some PDEs were locked as pdf documents, which meant that local CPD facilitators were not able to adapt these for their own purposes. Again, we understand these issues have been discussed across the network and resolved. Looking ahead, the test for the network is to ensure both the consistency of the quality of the PDEs, and that there continues to be clarity about how resources will be updated regularly and how they can be adapted for local use.

In terms of gathering feedback and evaluating impact, through the impact toolkit, the network has an effective good mechanism for collecting evidence of impact. During the first 12 months of the network's operation, however, the processes and feedback loops for sharing with the individual SLPs the impact data from the CPD that they had delivered were not in place. These feedback loops are vital for SLPs, not only to evaluate and refine their practice, but also to be able to demonstrate their impact in marketing their offer to local schools and colleges. We understand that processes have now been put in place in all regional consortia to share this data routinely with SLPs.

To ensure quality and impact, all regions have also invested time in coaching and mentoring new schools-based CPD facilitators trained by the SLPs and quality-assuring their delivery of CPD. In addition, at SLP level, we have also found innovative examples of ways in which SLPs have sought to gather feedback in a way that is not unduly time-consuming and burdensome, such as the example of Altrincham Grammar School for Girls below.

Gathering formative feedback on quality and impact: Altrincham Grammar School for Girls (AGGS)

AGGS is an 11-18 academy in Trafford, linked to the teaching school alliance, Alliance for Learning. In order to build the profile of the SLP and ensure the CPD is having an impact in classrooms, the SLP lead sends a brief thank-you email to each CPD participant after the CPD. This short message, plus any resources from the CPD that can be shared, helps to foster a dialogue giving CPD participants the chance to ask questions and share examples of how they have used the CPD.

- **For CPD participants** – one said she welcomed the fact she had direct contact with the SLP lead and knew when she would be free to respond to emails or talk on the phone. She said this was ‘a bit like a help-desk’, and valued being able to ask questions and share ideas.
- **For the SLP** – the SLP lead said, ‘it is important that I know what I am doing is relevant, practical and being used. It does not take a massive amount of time, but it builds rapport, and that is the thing that spreads.’

In terms of sustaining the network, it is important to recognise the transitional nature of this phase of the NSLN regional programme and the improvements that have been made to address some of the initial challenges. In the examples highlighted in this chapter, it is clear that key to addressing the frustrations and challenges reported to us has been using the time and collective expertise of members of the network to discuss issues and develop practical solutions. As the network continues to develop, these discussions will provide an ever more vital form of ongoing feedback about whether the network’s systems are facilitating local delivery of CPD effectively, any practical issues that are being encountered locally, and potential solutions to overcome them.

Conclusions – Reflections and recommendations

The period between August 2013 and March 2015 has been one of immense change for the NSLN's regional programme. In that time the network has moved from a tried-and-tested model of delivery, based on nine RSLCs, to a completely new model led by 51 SLPs, across five regional consortia. This bold re-imagining of the regional programme has taken place against the backdrop of very considerable national change.

Since August 2013, when the new regional programme was launched, increasing numbers of schools have taken the decision to become academies and teaching school alliances have increased in both size and strength, making the concept of a school-led approach to system improvement a reality. At the same time local authority support for school improvement has diminished and traditional subject networks have been, in some cases, eroded. There have been significant changes to the curriculum and qualifications and, while schools' budgets have been protected from the level of cuts made elsewhere in the public sector, there is a sense that schools and colleges are increasingly conscious of the need to use their resources cost-effectively. All this has presented huge opportunities, as well as very considerable challenges, for the establishment of the new regional programme.

Arguably the greatest achievement of the NSLN regional programme has been that during this period of reinvention it has not only maintained but increased the quality and impact of its CPD offer. In 2014-15, the impact reported by CPD participants on their own practice, on the practice of other staff, on the practice of the school as a whole, and on pupils exceeded by some margin that reported in 2012-13, the final year of the previous programme. This year, 95% of participants agreed that the CPD had an impact on their own practice, and 80% agreed that it had an impact on their pupils. The survey that we conducted with both CPD participants and school leaders during the course of the research corroborated these very high satisfaction levels and confidence that the CPD was having a positive impact on teaching and learning.

A number of factors have contributed to this trend of increasing impact. Firstly, the NSLN has retained the practice, established as part of its previous regional programme, of designing the CPD content nationally to ensure that it is continually informed by the latest developments in science, that it responds to national curriculum changes, and that it meets a consistent quality benchmark. While there have been some tensions around the timely development of course content materials in the early phases of the programme, this national approach undoubtedly contributes to a consistently high-quality offer. The second strength has been the role that RDLs have played in coaching and supporting new SLP leads and carrying out some of the training to model best practice. Many RDLs had experience of working under the previous regional programme and/or of working on other science CPD support programmes. Their continued engagement has ensured that their institutional knowledge and expertise was not lost to the network.

These two factors go some way to explaining how the previous levels of quality and impact have been sustained, but arguably other developments in the network have contributed to the increase in impact. The first of these is that the NSLN achieved its primary aim – of creating a model of CPD and the improvement of science teaching and learning that is genuinely led and delivered by schools and colleges for schools and colleges. This was born out of a deep-seated belief that combining a national body of science knowledge with local expertise, understanding of context, and skill in pedagogy would be a potent mix. So it has proved. The NSLN has exceeded its targets for the percentage of science CPD delivered locally, and has increased the number of teachers and technicians trained and delivering CPD alongside their classroom practice. In addition to this, and partly as a result of feedback received

during the interim stages of the evaluation, the NSLN has focused afresh on building an understanding of how to measure and assess the impact of CPD on teaching and learning into their course content and approaches to training. This is supporting participants to understand more accurately the impact that CPD has had, to change practices in their classroom and school to maximise impact, and to report this accordingly.

As well as working towards targets for increasing the quality and impact of their offer, the NSLN set very ambitious targets for increasing the volume and reach of CPD delivered by the regional network. These targets were all set at a level that exceeded volumes of delivery and reach achieved in the final year of the previous regional programme. The experience of the last 20 months has proved just how challenging it has been to sustain levels of delivery during a period of such significant transition and change. A significant amount of time during the first term of the new model – the autumn term 2013 – was taken up by setting up new systems, identifying and negotiating with prospective SLPs, and establishing new partnerships. There was, therefore, less capacity within the network to deliver CPD, and levels of delivery in the last two terms of 2013-14 dropped to less than half of what they had been in 2012-13.

The number of units of CPD delivered are now back up to over 75% of the delivery achieved in 2012-13 and, while this is some way short of the very ambitious targets set, it is rapidly increasing and showing a very positive trajectory. Similarly encouraging is that the reach to schools and colleges is now at over 80% of the 2012-13 level. Nonetheless, it is worth reflecting on some of the challenges that contributed to the difficulty in sustaining the volume of CPD activity over this transitional period.

The greatest challenge reported to us during the evaluation was the successful recruitment of participants onto courses. The vast majority of SLPs during the course of the evaluation said that they had scheduled events and had to cancel them through lack of take-up. Our evaluation has identified a number of factors that contributed to this, both internal and external. To consider the external factors first, our evidence from interviews with those providing and receiving CPD suggests that the market for CPD in schools is changing. There appears to be a much greater emphasis in schools and colleges on providing CPD in-house, or looking to immediate networks such as a teaching school alliance or multi-academy trust partners, than sourcing CPD from external providers. This, coupled with the growing challenges associated with releasing teachers from class and providing cover, appears to be leading to lower demand for externally-provided subject-specific CPD and, when that is commissioned, a preference for in-school methods of delivery or scheduling around teaching time.

This meant that the climate into which the new regional programme was launched was challenging. There were, however, also some internal factors that contributed to the lower volumes of delivery. In many areas the time it took between the old regional programme ending and the new arrangements gearing up, coupled with the challenge of rapidly building capacity and skilling-up individuals new to the task, meant that the momentum was lost and the presence of the NSLN in localities diminished. In some cases, schools thought that the NSLN regional programme had ended, or did not immediately associate the new offer with what they had been used to previously. For those coming new to the delivery of the NSLN's regional programme, there was the initial expectation that if good-quality courses were scheduled people would come. This meant that the requisite time was not always invested in marketing, forging connections with schools and science leaders, tailoring the offer to meet local needs, or thinking creatively about scheduling in order to create a vibrant local market for science CPD. In tandem, there was frustration with some of the central systems designed to facilitate the network, such as the booking system, which many SLPs reported were not sufficiently responsive or adaptable to meet their fast-changing needs.

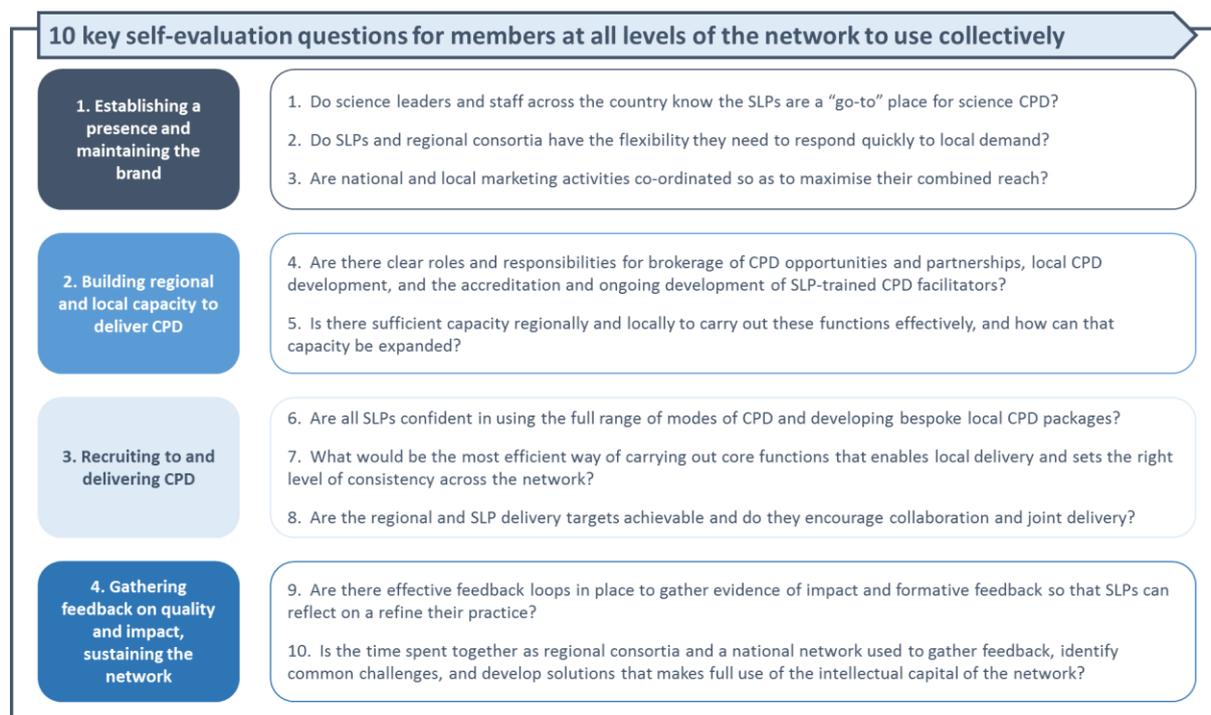
Despite these considerable challenges the data on volumes of delivery and reach now show that the network is on a strong upwards trajectory. This is testament to the hard work, persistence and inventiveness of all those engaged in making the NSLN regional programme a success. Our evaluation has focused on some of the key ways in which this improvement has been achieved over the last year.

- **SLPs thinking creatively about how to re-establish the presence of the NSLN in their locality and creating their own unique identity.** They have acquired new skills in marketing with a particular emphasis on building professional networks with science leaders, and are reaping the benefits of a national brand with a local flavour.
- **A systematic approach in many localities and regions to rethinking the shape of the CPD offer,** with a greater emphasis on bespoke work for individual schools, greater flexibility around the timing of events and courses, and an important brokerage role, increasingly carried out by RDLs to enable this more responsive approach.
- **The regions beginning to maximise the benefits of cooperation,** with increasingly successful platforms for sharing learning, joint scheduling of CPD between localities, and creating a network dividend.
- **SLPs finding ways to reach out beyond their established networks** to engage those schools and colleges that have previously not benefitted to the same extent as some of their peers from science-specific CPD either through the systematic targeting of priority schools or through other forms of active outreach.
- **A national network that is increasingly responsive to challenge and able to change.** An impressive aspect of our experience of working with the network is that, where interim stages of the evaluation identified areas for improvement, these have been acknowledged and acted upon. SLPs have told us that these changes are enabling them to deliver more effectively.

The transition from a model based around nine RSLCs to a network of schools- and colleges-led SLPs has been more challenging than many members of the network had anticipated. The increasing impact of the CPD that has been delivered, however, coupled with the consistently improving trajectory in volumes of delivery and reach to schools and colleges are cause for optimism. At the crux of some of the challenges experienced is a question about balancing what needs to be “tight” and consistent across the network and what can be “loose”, where regional consortia and SLPs have greater flexibility and autonomy. Much of the debate about the role and effectiveness of the core central systems, explored in the previous chapter, reflects this issue. Getting this balance right is at the heart of unlocking the immense potential of the new regional delivery structure – ensuring consistency, quality and a cutting-edge body of national science expertise on the one hand, and local innovation on the other.

The next 12 months of the regional programme offer a good opportunity for the network to consider collectively how best to achieve the balance between national consistency and local innovation, between tight and loose. For that reason, we have framed 10 key questions that we hope will help members of the network, through their regional and national meetings, to self-evaluate, to think about how they want their network to operate, and to continue to test and refine the way the network delivers local science CPD.

Figure 5.1: 10 self-evaluation questions for the network to use collectively



Overall, to continue to succeed in the current challenging and changing educational climate, members of the network at national, regional and local level will need to:

- have the systems in place to learn from each other;
- be adaptable and responsive to demands from schools and the wider education system;
- be innovative in how they shape, rather than just respond to, the market;
- outward-facing in how they foster and support networks of professionals; and
- be tough and resilient in carving out capacity in the face of competing demands for time.

Individual partners in the network have proved they have these qualities and abilities in order to achieve what they have over the last five terms. The challenge now is to embed them systematically and consistently as a joint endeavour, to make the network greater than the sum of its parts.

Glossary of abbreviations used in the report

CPD – continuing professional development

DfE – Department for Education

NSLN – National Science Learning Network

OECD – organisation for economic co-operation and development

PDE – professional development experience

RDL – regional development lead

RSLC – regional science learning centre

SLE – specialist leader of education

SLP – science learning partnership

STEM – science, technology, engineering and mathematics

TALIS – the teaching and learning international survey