Development tool

NCSL National College for School Leadership

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What are we
learning about...?

Sustaining a network of schools

Using data for self-evaluation

A development tool designed to explore the use of data and network sustainability

Using data for self-evaluation

This **development tool** has been designed to explore different kinds of data and what they can tell us about sustaining a network of schools. It presents examples of both hard and soft data from an actual network – Network A – from the Networked Learning Communities (NLC) programme. The tool demonstrates the questioning process by which all networks can interrogate their data to get to the heart of sustainability ie what a network is doing well, what it might build on and what it might adapt.

This tool will be most useful to network leaders or activists who are looking at the sustainability of their network and want to learn about how to interrogate different kinds of data for this purpose.

The data sets used:

- % pupils achieving level 4+ and level 5+ in English at Key Stage 2. For more information please see: http://www.dfes.gov.uk/performancetables/primary_04/p4.shtml
- average point scores at Key Stage 2. For more information, please see: http://www.dfes.gov.uk/performancetables/primary_04/p4.shtml
- value added measures from Key Stage 1 to Key Stage 2. For more information, please see: http://www.dfes.gov.uk/performancetables/primary_04/p3.shtml

All these statistics are produced at the school level and are publicly available from DfES website: http://www.dfes.gov.uk/performancetables/

Types of Data

When referring to data, there are two different types – quantitative and qualitative.

Quantitative research examines events which can be quantified and so quantitative data are usually in a numerical format, or are data that can be transformed into numbers. So examples of this type of data are the total point score for each pupil, the number of pupils achieving a level 5 in maths, or the number of pupils late for school. These data can be statistically analysed and can provide a statistical foundation from which to progress an argument.

Qualitative research uses descriptive data, such as written descriptions of people, including opinions and attitudes, and of events and environments. Qualitative data is usually of a non-numerical format and is often collected in the form of words.

These data can be collected via interviews, focus groups and observations, and is concerned with meanings and the way people understand things. So, examples of qualitative data might be: a transcript from an interview with a headteacher, or a case study which provides a detailed account of an NQT's first year in teaching. □

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A network case study

This tool uses evidence from a real network to show how quantitative and qualitative data can help learning networks consider the question of sustainability.

How can we use data to:

- identify what is working?
- embed and build on what is working ?
- adapt the network to take up new possibilities ?

Network A: Real data

Established in 2002, Network A serves over 5000 pupils and comprises 16 schools – 2 secondary, 12 primary, 1 junior and 1 infant school. Part of the stated aims and objectives of the network was to raise standards of achievement by focusing on *improving the teaching and learning for Gifted and Talented pupils.*

Just prior to the formation of the network, an Ofsted report of the local authority had highlighted a general lack of appropriate extension and enrichment activities for Gifted and Talented pupils. When the schools came together to submit a bid to become a funded network this theme was agreed by all as a strong one.

Working within an authority where selection continues to operate and where school admissions are determined according to a narrow field of 'academic ability' has presented particular challenges for the network. This school system creates the potential for more intense selection and competition between schools and it can also distort the view of what constitutes Gifted and Talented 'ability'.

However, Network A was determined that **all pupils** would benefit from the development of joint working arrangements and sharing of expertise across schools. Its two central challenges, therefore, were to:

- help counter the sense of intense competition that existed amongst and between the network schools
- help to develop a broader and more inclusive perception and understanding of 'gifted and talented' ability.

They aimed to do this by focussing on children and their learning by *'actively involving pupils and their parents in the learning process'*. They also wanted to create *'a collaborative learning culture* to *raise standards by improving the learning of pupils, staff and community learning partnerships'*.

Network activity has included the appointment of a dedicated network co-ordinator and a nominated Gifted and Talented co-ordinator in each school to plan policy and practice, and to disseminate ideas and learning. Pupil-centred activity has included projects such as summer school and master classes for Year 4 students and a pupil research project conducted by Year 8s on issues affecting transition.

Self-evaluation: a fictional framework

In what follows we reflect on how the network might look for evidence that these processes and practices are making a difference to pupil learning. After a substantial period of collaborative working, they wanted to know what kind of impact they were having on pupils and how successful they had been at extending the notion of 'gifted and talented' within the Network. They decided that if they had been successful in their aims, pupils in the network would be:

- more confident and motivated
- attaining higher grades

They then identified the information, or data, that would provide them with the evidence that they have been successful and whether their network is becoming sustainable. They decide to use:

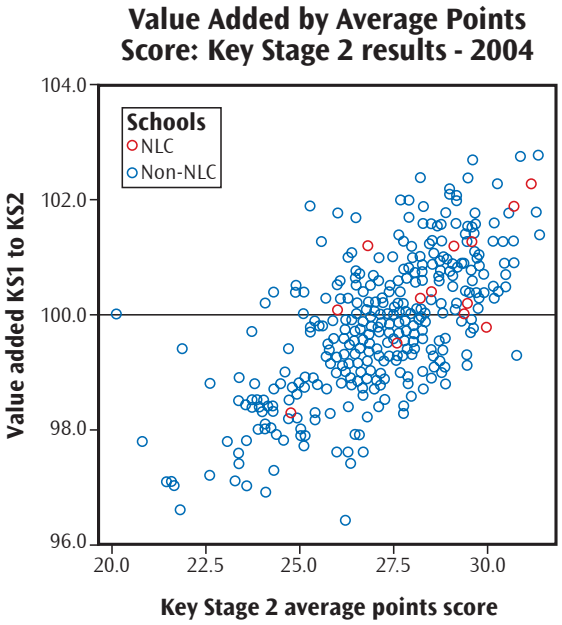
Quantitative data

Value added scores and attainment in Key Stage 2 at level 4 and 5 in the period before and during the network's operation.

Qualitative data

Teacher comments, perceptions, attitudes to learning, relationships and communication skills.

Quantitative data: Value added data



What is value added?

Value added measures have been developed to take into account the prior attainment of pupils and so measure the progress pupils make between assessment tests. Value added scores are shown as a measure centred around 100 – scores above 100 represent schools where pupils, on average, have made more progress than similar pupils nationally, while scores below 100 represent schools where pupils have made less progress.

How is value added data useful for learning networks?

Value added scores are frequently seen as a fairer way of comparing between schools. Value added data is therefore a good starting point when looking at the attainment data of a network.

What are the red and blue dots?

The red dots show the network schools and the blue dots are a non-network comparison group – these schools are not part of the network programme but are within the Local Authority in which the network is based.

What does this show?

The graph opposite shows attainment data, represented by average point score (APS), plotted against value added data. This data was taken from the academic year 2003/4 and features all of the schools within the local authority. The data used in the graph is school level and **so each dot represents one school**. In a graph like this the aspiration would be for schools to be in the top right of the graph, where attainment is high and value added is high. Being in the top half of the graph is also a positive outcome.

This kind of analysis enables the reader to pick out individual schools and examine where they sit within the local authority. For example, you could use this graph to examine outliers (ie schools which stand out as lying away from others on the graph) – such as the school on the 100 line for value added at 20 APS. You can also use this analysis to examine how the patterns of the dots shift over time and so look at how the achievements of the schools move over time.

What does this mean for Network A?

What can Network A say about these data?

Dots appear in this shape because there is a positive correlation or relationship between the Average Point Score (APS) and value added data – this means that generally as attainment increases, value added increases.

What does this mean for the network?

From the scatterplot, they can see the spread of the schools within the network, and how they compare to the rest of the schools across the local authority. They can say that *network schools are within the local authority spread and are generally performing in the top half of all the schools.*

What else can they say?

They can also make statements about network schools adding value. For example, they can count the number of dots over the 100 value added line. Ten schools are above this line, and so they can say that *the majority of network schools (10 of the 13) add value at key stage 2.* However, they can also say that 3 do not – and that one of these 3 appears to be an 'outlier' amongst the 13 schools.

Further questions...

- Which schools are the high and low red dots?
- How can they learn from these schools about how to improve our practice across the network?
- How can the network schools find a way to transfer their practice beyond the network for the benefit of all schools in the region?

Pause for thought...?

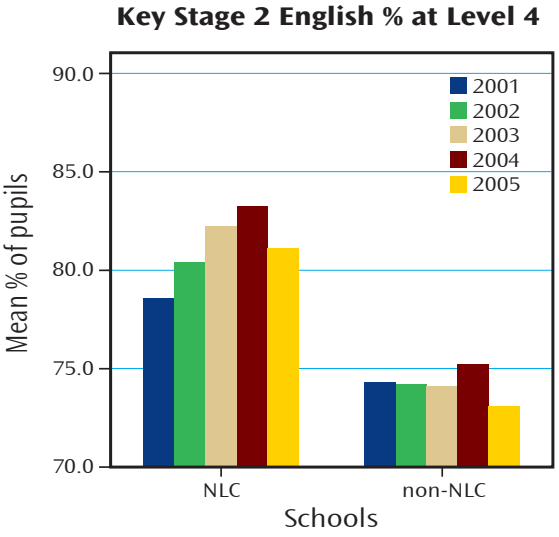
Network A needs to think about how they can close the gap between higher attaining schools and lower attaining schools within the network. What activity will allow them to do this?

Self-evaluation: the next step...

They don't have enough here to see what improvements there are in their network – they need to look at more detailed attainment data to get a more accurate picture. They choose to look at attainment data at level 4+.

Quantitative data: Attainment data level 4+

What is aggregation bias? School level data is an aggregate of individual pupil data. This is aggregated again to give network level data. So network level is an average of an average and therefore may have an aggregation bias, or may not represent the true picture. Pupil level data (which would create a more accurate network average) is not available publicly and is subject to rigorous data protection.



% Pupils at Key Stage 2 English Level 4+

	2001	2002	2003	2004	2005
Min	42 9	60 0	50 18	65 21	61 0
Max	96 100	93 100	100 100	100 100	98 100
Mean	78.6 74.3 75.0	80.4 74.2 75.0	82.2 74.1 75.0	83.2 75.2 78.0	81.1 73.1 79.0

Key:
NLC schools (n = 13)
Non-NLC schools (n = 372)
National

The data shows attainment in terms of the percentage of pupils achieving a level 4 or higher in English at Key Stage 2. The graph above shows these data over time and includes a comparison group. (This non-network group is all the schools in the local authority who are not part of the network.) When focusing on network sustainability, it is important to look for improvements over time, and to compare performance against a sample of non-networked schools.

Changes over time

This particular network was formed in January 2003 and so we have data from both before and after the network was formed. We can use this data to calculate change scores. Using 2002 as the baseline, we can see that from 2002 to 2005:

- network schools increased by 0.7%
- non-network schools decreased by 1.1%
- the national figure increased by 4.0%

Points to remember:

1. The data is collected at the **school level** and so when averaged across the learning network schools an **aggregation bias** is created (see margin).
2. Any analysis over time, such as the data in the graph on the right, means that the figures are taken from different cohorts of pupils – the data from each year involves different pupils.
3. Although there are actually 16 schools in the network, only 13 take part in Key Stage 2 assessments and so data from 3 of the schools is not included here.
4. Finally, there are issues involved in the use of threshold statistics. The 'percentage of pupils achieving a level 4 or above' is a threshold and so
   - is subject to a ceiling effect (the ceiling being 100%) and
   - will tend to only pick up the improvements made by pupils who originally lay just below the threshold.

Continuous data (such as APS) shows the actual improvement of pupils at all levels of attainment and so would be a more sensitive measure.

What does this mean for Network A?

Although the network group of schools displayed increases in attainment over and above the non-network comparison group, they cannot conclude that it is necessarily the network that has caused these increases in attainment. Similarly they cannot say that the increases in attainment in the network schools over time are caused necessarily by the formation of the network. There may be other factors, such as new members of staff or other national initiatives, which are nothing to do with the network but have led to improved attainment.

What they can do is:

- observe the trends
- ask questions
- look to further research for explanations

For example:

Network schools are higher attaining in English at level 4+ when compared to the comparison group of schools. They can also say that there are different ranges of data (minimums and maximums) from the two different groups. For example, the non-network minimums dip to 0 at 2002 and at 2005, however there is no such dip for the network schools.

Up to 2004 they can say that the network schools are showing yearly increments, whereas the comparison group is displaying a slight decrease then an increase. However from 2004 to 2005 there is a drop in network and non-network schools. This could have been due to a factor present across the local authority as a whole.

Further questions...

- Why are NLC schools higher attaining in English at level 4+?
- How have network schools avoided the dip?
- What happened? Why the increase and then the sudden decrease?
- Why is there a decrease in both groups from 2004 to 2005?

Pause for thought...?

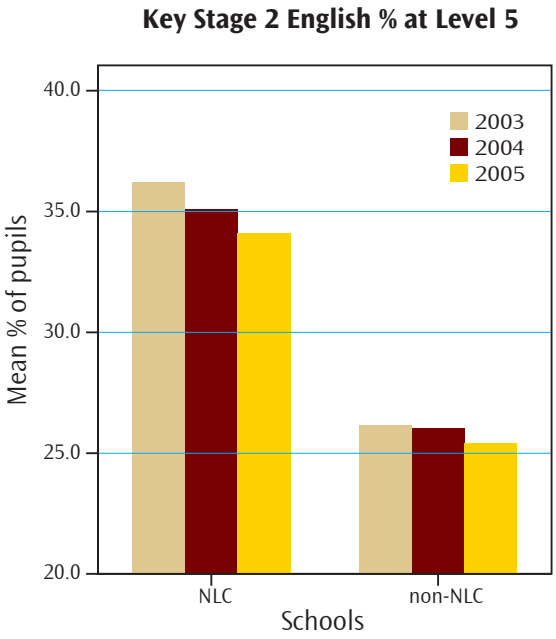
Do they think the increments at level 4+ are sustainable?

They have noticed that the Network school averages at level 4+ are above the local authority comparison group. Their network focus is Gifted and Talented so they would expect to see higher attainment at level 5+.

Self-evaluation: the next step...

They choose to look at attainment data at level 5+. If the pupil learning focus is to look at high attaining students – those who achieve level 5 at Key Stage 2 – one way of assessing the success of Gifted and Talented provision is to isolate the scores of those children who are attaining at the top of the range.

Quantitative data: Attainment data level 5+



% Pupils at Key Stage 2 English Level 5+

	2003	2004	2005
Min	14 0	9 0	4 0
Max	63 75	71 85	50 96
Mean	36.2 26.1 27.0	35.1 26.0 27.0	34.1 25.4 27.0

Key:
NLC schools (n = 13)
Non-NLC schools (n = 372)
National

(Note: Level 5+ attainment data is not publicly available for 2002)

What do these data show?

The data shows attainment in terms of the percentage of pupils achieving a level 5 or higher in English at Key Stage 2. The graph left shows these data over time and includes a comparison group. (This non-network group is again all the schools in the local authority who are not part of the network.) Their focus is network sustainability, and so again, they will look for improvements over time and improvement compared to schools which were not in the network.

Changes over time

In calculating the change scores, and using 2003 as the baseline (this is the earliest publicly available data), you can see that from 2003 to 2005:

- network schools decreased by 2.1%
- non-network schools decreased by 0.7%
- there was no change to the national figure

Points to remember:

1. The analysis uses the same principles as the level 4+ analysis that was explored earlier – the graph shows the data over time and includes a comparison group. Change scores were also calculated by looking at how the data changed over time.
2. As with the earlier analysis, we should take care to acknowledge the issues of aggregation bias, different pupil cohorts, the number of schools involved and threshold statistics.

What does this mean for Network A?

Again, just as they talked about the level 4+ increases, they cannot talk about cause and effect. So although the network group showed attainment over and above the non-network comparison group, they cannot say it is the network that is causing the higher levels of attainment. Similarly they cannot say that the decreases in network schools over time is caused by the result of a network forming.

Again, what they can do is:

- observe the trends
- ask questions
- look to further research for explanations

For example:

Network schools are higher attaining in English at level 5+ than the comparison group schools. The network schools are showing year on year decreases. However, similar year on year decreases are observed in the non-network comparison schools.

Further questions...

- With all their efforts going into Gifted and Talented why have there been decreases at level 5+?
- Are the decreases something affecting the whole of the local authority?

Pause for thought...?

The percentage of pupils achieving level 4+ at English has risen in comparison with the Local Authority, however the percentage of level 5+s has slightly decreased over the same time period. Does this mean that the network has successfully targeted its marginal level 3/4s but has had no impact on the more able children on the 4/5 borders? Does this reflect the way their learning focus has started to shift?

If their attainment scores are not going up as they would expect, can they find other evidence of their success and the impact of their work on pupil learning?

Self-evaluation: the next step...

How can this quantitative data, together with further qualitative data tell them more about the sustainability of their network? What other evidence do they have about what is working, what they need to embed and what they need to change?

Qualitative Data: Questionnaires

Looking at quantitative data shows that Network A's Gifted and Talented provision has not had as profound an effect on pupil attainment at the top of the scale as they might have hoped. But it does not necessarily mean that the network has been unsuccessful, or that their activity is unsustainable.

Network A had a clearly defined learning focus from its inception, but one that participating schools have not been afraid to develop and change. The focus of the network has shifted over time to one of improving the identification and development of the gifts and talents of all pupils.

> ***"[T]he leadership of the network has had to work hard to alter the perceptions of 'ability', particularly in terms of what is meant by 'gifted and talented'."***
>
> NLC programme Annual Enquiry 2005

Qualitative data can give us another perspective on how the gifts and talents of all pupils have been fostered and improved through network activity. This general improvement has already been identified by quantitative analysis. The qualitative data gives clues to the work that will sustain the network. Both of the pupil-centred projects appear to have had significant impact in terms of raising levels of pupil confidence and self-esteem.

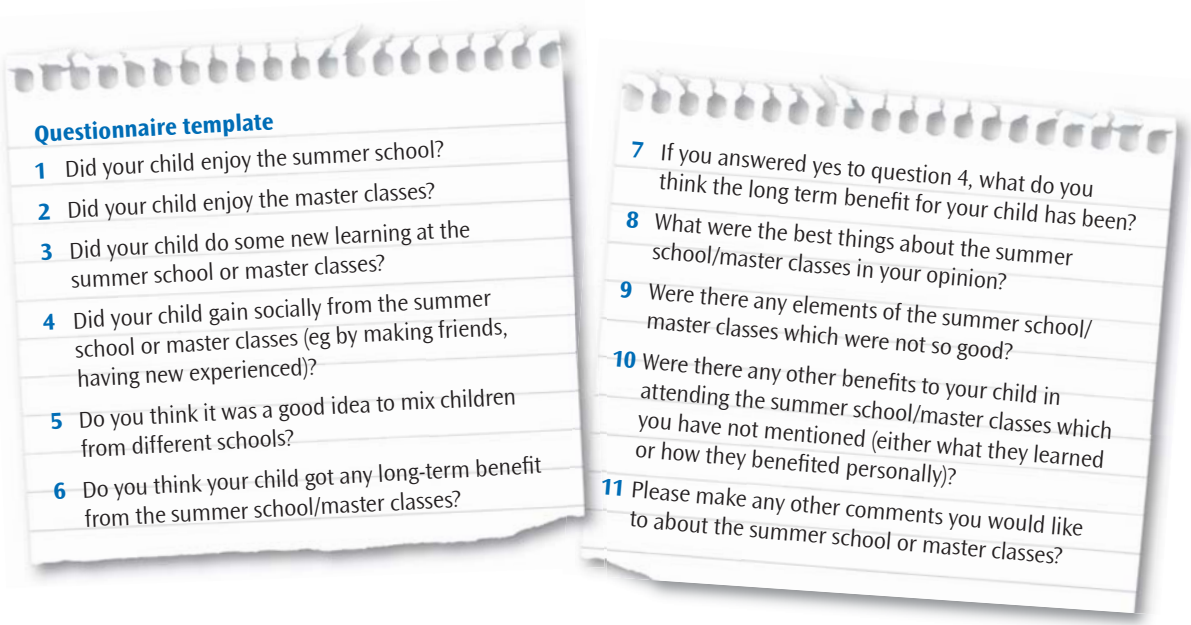
Project A: Year 4 Summer School

Thirty eight Year 4 students attended a week-long 'Gifted and Talented Summer School' during August 2003. The summer school was hosted by a private school with a strong history of working collaboratively with local state primary schools. This summer school was attended by Year 4 pupils who had been identified as talented in the areas of science, maths and ICT. Schools were asked to identify 1 or 2 pupils who they felt would benefit from the project. The 38 pupils who attended the summer school were also invited to attend 3 Saturday master classes over the course of the following year.

The summer school and master classes had a themed focus on ecology, environmental issues and the curriculum learning was largely in the areas of science, maths and ICT. The key features of the session were that they had little focus on writing and more on experiential learning, and that the pupils were in small groups. This might be called a 'traditional' type of activity for Gifted and Talented in that it extends and enriches the learning experience of a group of pupils who were already at the higher end of academic achievement in their schools

Using questionnaires

Several sets of qualitative data were collected – children, teachers and headteachers were interviewed and parents were asked to complete a questionnaire. Questionnaires were distributed to 38 of the parents of all the pupils who attended – 9 were completed and returned.



Questionnaire template

1. Did your child enjoy the summer school?
2. Did your child enjoy the master classes?
3. Did your child do some new learning at the summer school or master classes?
4. Did your child gain socially from the summer school or master classes (eg by making friends, having new experienced)?
5. Do you think it was a good idea to mix children from different schools?
6. Do you think your child got any long-term benefit from the summer school/master classes?
7. If you answered yes to question 4, what do you think the long term benefit for your child has been?
8. What were the best things about the summer school/master classes in your opinion?
9. Were there any elements of the summer school/ master classes which were not so good?
10. Were there any other benefits to your child in attending the summer school/master classes which you have not mentioned (either what they learned or how they benefited personally)?
11. Please make any other comments you would like to about the summer school or master classes?

What does this mean for Network A?

Analysis of these data shows that 3 out of 9 parents of pupils reported a long-term increase in confidence in their children almost a year after the event. Other comments referred to the new knowledge and understanding that was gained on environmental and ecological issues, in addition to the social benefits of the project. Of the 9 parents who completed the questionnaire, 7 added additional comments, which were overwhelmingly positive. There were also suggestions for the future, such as providing more challenge to the children and expansion to other subject areas.

The pupils' perspective

During a series of interviews, the pupils reported that the project had given them the opportunity to work with different people in new and unusual settings.

> ***"Master classes are more fun than normal classes – instead of so much writing like at school – we did far more action things, just describing what we did instead of having to write it down. It was more of a challenge as well"***
>
> Year 4 pupil

Several pupils explained that they now felt more confident when speaking up in class. However, pupils in the summer school also reported not wanting to tell their friends about their experience at the summer school or talk about it on the return to school.

Pause for thought…?

Despite their increased confidence, the children did not want to share their experiences when they got back to school. Was this because the invitations to attend the summer school and master classes were based on academic achievement?

Now Network A needs to think about how can they expand such an opportunity for all pupils? How can they sustain the positive improvements?

The parents' perspective

'What do you think the long term benefit for your child has been?'

- Increased confidence
- Mix with children / social skills
- Exposure to facilities and opportunities
- Knowledge of re-cycling and environment

'Were there any other benefits to your child in attending the summer school / master classes which you have not mentioned (either what they learned or how they benefited personally)?'

- Doing things she had not done at school previously was good
- Good to be in an environment with other bright children
- Gained confidence
- Learned more about the environment

'Please make any other comments you would like to about the summer school or master classes'

- Master class not as good as summer school
- Fantastic course, thank you
- Good idea – what about subject specific courses?
- Fantastic idea but not challenging enough
- Excellent summer school – my child loved it
- They should continue
- An excellent scheme and idea

Qualitative Data: Interviews

Project B: Pupil research project Year 8s on transition

The two secondary schools in the network both have groups of Year 7/8 pupils involved in a pupils as researchers project. Pupils were invited to participate after being identified as having particular gifts or talents in areas which would be useful to the projects. These included ICT, maths, art and design, questioning and communication skills. The target group was not simply pupils who were the highest academic achievers and the resultant pupil research groups therefore represented an effective balance of skills and abilities.

Using Interviews

The students were given the task of undertaking a piece of research into issues affecting transition for Year 6 to 7. The two groups each worked with an experienced and key teacher who helped them to set their own research question design the methodology and analysis of the research and choose the medium of dissemination of results.

As with Project A, several sets of qualitative data were collected – interviews were conducted with both the student groups and with the two teachers who led the project.

Interview schedule

1. What is your role in your school?
2. What is your role in the network?
3. Please describe the research project, what has been your involvement?
4. What do you feel have been the greatest challenges in implementing the project?
5. How were the pupils picked?
6. How did your pupils benefit from the project?
7. What do you feel have been the positive outcomes for your school?
8. What were your feelings about the project?
10. How has the network contributed to the success of the project?
11. What do you feel have been the positive outcomes for the network?
12. Do you want to say anything else about the research project?

A teacher's perspective

'How did your pupils benefit from the project?'

'We asked the girls, one of the things they identified was that they had learned to look at things differently. What they thought was obvious they realised would not be obvious to someone else. Interesting. Working as a group to be effective.'

'Had you noticed that?'

'Yes – much more of a cohesive group by the end, coming up with ideas, tackling teachers etc, using ICT lessons. They were quite chuffed to have been chosen – what they had done was going to go out quite widely. Self-esteem is good.'

'What do you feel have been the positive outcomes for your school?'

'They [the pupils] have certainly become more responsible and independent over time – by the end of the project I was saying this is what you've got to do, and they went away and planned it and did it. This research has highlighted that we can do really interesting stuff with our girls and they don't have to be fast-trackers.'

'What were your feelings about the project?'

'I almost had to be pushed into this initially because I'd just done some research for my MA – 'here we go again' – but as soon as we started I recognised this was different and I was pleased to be involved. It's been really nice to be involved with the network because you can get very insular.'

What does this mean for Network A?

The pupils' perspective

Other data revealed that both the teachers and pupils found the opportunity for the pupil researchers to visit primary schools and to interview younger pupils as part of their work was significant in improving confidence.

Data from the pupils showed their pleasure and pride in being invited to participate in the research, and far from engendering a negative stigma for taking part, both teachers and pupils confirmed that there was status gained from participation. A number of pupils asked if they could join the project as it developed.

"Having a mixed ability group of pupil researchers worked very well. The boys were initially aware that there were some low and some high achievers but by the end there was clearly real equality – everybody listening to each others' ideas – it made them realise that everyone can have good ideas, whatever band they are in."

Teacher, head of year

The result of working in such a project was reported as positive by several pupils. They identified a high degree of improvement in their understanding and knowledge of research skills. A number of the students indicated they had successfully applied their new research skills in other subject areas since. Also, the result of being 'invited' to participate in such a project was seen very positively.

"It felt good that somebody had seen how good at working you were and you are one of a small group out of a much larger year group"

Year 8 pupil

The pupil research project is characterised as a non traditional Gifted and Talented initiative, in that participating pupils were a broad mix in terms of their academic ability, achievement and engagement. Indeed both of the teachers involved in the project reported that some colleagues were highly sceptical about the likelihood of some of the pupils completing the project successfully. '*Why have you got X in the group? I didn't think (s)he was Gifted or Talented' w*as a question that both teachers were asked by colleagues. In both cases the co-ordinating teachers expressed pleasure that these pupils had surpassed the low expectations of some colleagues.

What does this mean?

One way to analyse these data is to summarise the emerging themes. The effects on pupils were discribed as follows:

- appreciation of other's perspectives
- improved group work
- good self esteem
- more responsible
- increased independence

The effects on teachers were described as follows:

- appreciation of potential in all pupils
- professional development
- job satisfaction
- school and network perspectives

Sustaining a network of schools: how has data helped?

This tool has used quantitative and qualitative data to assess the direct measurable impact in terms of the achievement and engagement of pupils in a number of areas. *We can say that there is some evidence that pupil attainment has increased as a result of the work of the network.*

Network schools sustain increments at English at level 4+ but at level 5+ they show a drop. More children are achieving at level 4+, which may mean that network activity has helped children at level 3 to improve.

Key areas of pupil impact identified by a detailed look at the pupil research project and the summer school and master classes are in the areas of self-confidence and self-esteem, motivation to learn, team working, collaboration and specific areas of knowledge.

There are benefits to using both qualitative and quantitative in addressing questions of sustainability. Quantitative analysis can help you to examine changes across the whole network, to ask questions, to pin point areas of interest, to look for trends – not necessarily to examine cause and effect. Qualitative analysis can help to suggest explanations – to tap into the richness of the network, the processes by which change occurs and how that change can be sustained.

On the strength of the data analysis in this tool, it is possible to say that the most successful and sustainable projects observed were generally those which had a strong focus on the inclusion of all pupils. The pupil research project was assessed as more likely to have a lasting impact on the pupils involved and the network as a whole as compared to the relatively more insular summer school and master classes. □

What are we **learning about...?**

The six titles in the series focus on:
What are we learning about...?

- LEA involvement in school networks
- Establishing a network of schools
- Community leadership in networks
- *'Making mathematics count'* in school networks
- Facilitation within school networks
- **Sustaining a network of schools**

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