

Let's work together – supporting mathematics subject leaders through clustering

Aims of the project

- To provide a supportive network for mathematics subject leaders
- To develop approaches to teaching mathematics
- To share effective strategies and resources between schools

Dimensions of the study

The project involved mathematics subject leaders from twelve primary schools in a rural area. They were supported by their Local Authority Mathematics Consultant. School sizes varied between very small schools with mixed age classes to larger schools with whole class intakes.

Summary of main findings

- When subject leaders shared their learning in one another's schools, they felt more supported and confident in their own roles, such as taking on teaching in a different phase
- Subject leaders learned new strategies through collaboration with colleagues in other schools
- Afternoon cluster meetings between groups of subject leaders provided a valued opportunity to build networks and share resources between schools, avoiding the possible after-school clashes with staff meetings or sports clubs
- Resource packs, handed out at cluster meetings, were a timesaving way to help subject leaders share ideas back in their own schools
- Gap tasks maintained momentum between cluster meetings and develop a sharing culture between the group

Background and context

In our county, primary mathematics subject leaders (SLs) receive ongoing local authority support through a dedicated website, termly newsletters, termly cluster meetings held at venues across the county and a regular programme of centrally run courses. SLs identified a number of issues about this support:

- SLs felt there was a need to explore teaching materials and approaches in greater depth
- transport was an issue in this rural area; hour-long cluster meetings were held after school but many SLs struggled to reach them on time or they clashed with their own staff meetings and after school clubs; and
- SLs also reported that they felt isolated in their rural setting, and unable to access support between cluster meetings.

We approached the local authority with a proposal for piloting afternoon meetings, once per term. The proposal contained two key features:

- each meeting would last two hours - teachers would have longer to network, model how they used resources with pupils and update themselves on the latest news and publications; and
- for in-school support, we needed to set up a system where SLs could visit one another's schools, engage in professional dialogue and develop a more supportive cluster network, so we proposed teachers would need at least half a day release time per visit, or possibly a full day.

Teaching processes and strategies

We used two main strategies to strengthen our network and support teachers as SLs:

- cluster meetings; and
- school visits.

Cluster meetings

Each term we held our two-hour primary mathematics cluster meeting. This replaced the original after-school meetings which teachers struggled to attend. The new programme included:

- an activity to share with colleagues back in school;
- an update on the latest news and resources;
- networking time; and
- feedback from our NCETM-funded visits.

Each SL received a resource pack and disc to take back to their schools. A gap task was set up to maintain momentum between meetings.

Resource packs were designed for SLs to take back to schools and trial with colleagues. For example, in the Fractions Pack, SLs were given a selection of shapes, coins, fruit, counters and even Blu-Tac so that pupils could experience a wider range of challenges than were usually experienced in fractions lessons. For example, they considered ways to find half of a £2 coin, a quarter of seven counters or half of a potato, resulting in weighing or exchanging as alternative ways to find fractions.

A typical gap task involved asking SLs to audit their Foundation Stage mathematics provision, using materials from the National Strategy document, Numbers and Patterns. Many SLs had not spent an extended period in those classes and reported that it developed their confidence supporting Early Years colleagues.

School visits

Between meetings, teachers organised their visits to one another's schools. Each SL could arrange their visit/s according to their own needs. Some teachers who taught in small schools wanted to visit larger ones. Other teachers who had pupils organised in sets wanted to see other ways to organise their classes. Afterwards, the teachers reported back on their experiences at the following cluster meeting. Some teachers fed back verbally, others prepared notes. Popular areas for discussion were assessment, setting and effective classroom resources.

I've now been a subject leader for several years; I was able to share my skills with another maths colleague who visited my school. Because we were in my own school, it was so much easier to find examples of pupils' work to show how we approached assessment and pupil progress meetings. Everything was easily to hand so I could share resources. It was also good to walk around school and talk about how we offer support to teachers.

(Oral feedback from mathematics SL at cluster meeting following a school visit)

The findings

School visits

The overwhelming response from teachers was the benefits of visiting colleagues in a variety of types of schools. Through their visits, the SLs were able to observe alternative class organisation structures, teaching styles and resources. In a rural area, it is extremely difficult to conduct such visits and teachers can easily feel isolated and unsupported. The SLs valued their visits and felt that they should be developed further in the future, as this comment showed:

We would take it further, involving other teachers from our schools. Not just SLs. Why don't we set up paired

visits? We could visit other schools together. As maths leaders, we could point out useful displays, strategies and discuss the ideas then and there. If teachers visit by themselves, we lose that chance to talk maths with them.



(A mathematics SL's comments at cluster meeting.)

The teachers in the host schools supported the colleagues who came to visit them in a number of ways, depending on the needs of the visitor. For example, they could easily access assessment resources, work samples and other colleagues. During one visit, a visiting teacher had asked to focus on Assessing Pupils' Progress (APP). The school's subject leader was able to show examples of tracking and assessment sheets, model use of resources in learning situations and provide copies for the visitor to take back to their own school:

We took out the books and went through them. Everything was there, easy to share, I knew where to find things. I explained how we approached assessment and other teachers were around who also added their ideas. It worked so much better than being at a course. Being able to show what I meant, that's what worked so well.

(Comment made by mathematics SL at cluster meeting.)

Development of teaching learning: Counting Sticks

At the start of the project, a widespread reliance on Interactive Whiteboards (IWB) had been noted in the daily mathematics lesson. Pupils often sat on the carpet for long periods looking at an IWB with little interaction between them or with their teachers. SLs reported that staff often felt obliged to use their IWB due to their cost. As the project developed, we noted a huge increase in the use of counting sticks in lessons. For example, more schools included counting sticks in the oral and mental starter session once it had been modelled at cluster meetings. Teachers had been reluctant to use them rather than the IWB. But they found that pupils enjoyed the practical and highly visual activities, using counting sticks, that they had introduced and that pupils were becoming more confident due to the daily counting focus. Some schools were very imaginative using their counting sticks – they became broomsticks, wands or even light sabres! They gave pupils smaller versions so they could rehearse their skills alone or in pairs. The resources were most effective when they had been modelled by SLs beforehand in a staff meeting, supported by ideas lists and resources.

Gap tasks

The use of gap tasks helped to embed resources and strategies in schools by supporting SLs in transferring ideas for learning from the SL group to their own schools. For example, one SL shared the fractions gap task materials in their staff meeting as there

had been little progression with fractions among pupils across the school up to that point.

Most teachers used pizzas as examples for fractions questions. There wasn't much variety. Using the pack, we tried finding half of a potato or a coin. It made us think, not as many pizzas next term!

(Oral feedback by mathematics SL at cluster meeting)

Extending the learning of SLs: teaching in the Foundation Stage

Many primary mathematics SLs taught in Year 5 or Year 6. They lacked confidence working with Key Stage One and especially Foundation Stage pupils. Through the extended cluster meetings, we offered opportunities for teachers to share their experiences of working with different age groups. Several SLs worked alongside their Foundation Stage colleagues to develop APP across school. The National Strategy document, Numbers and Patterns, was extremely helpful for SLs who were unfamiliar with Foundation Stage practice, especially in relation to the learning environment audit.

Research methods

Our data were based upon the perceptions and observations of the twelve participating SLs. Their comments about classroom visits and gap tasks were noted during feedback sessions at the beginning of each cluster meeting. The feedback was recorded and analysed by one of the teacher-researchers for evidence of teachers sharing new approaches to teaching mathematics and learning from each other.

Conclusion

To provide effective support for SLs, a variety of flexible approaches was necessary. We focused on trialling afternoon cluster meetings and arranging visits to one another's schools, supported by funding from the National Centre for Excellence in the Teaching of Mathematics. Both approaches proved successful. The afternoon cluster meetings have now been adopted by all mathematics and literacy clusters across our county.

As we progressed, we learnt the importance of gap tasks to maintain momentum between meetings. Another key point was that SLs were helped to support visiting colleagues in their own schools by ensuring ready access to assessment samples, work scrutinies and useful resources.

Suggestions for further reading

Microsite MKN 0938 - Strengthening Mathematical Knowledge
www.ncetm.org.uk/resources/24760

Ollerton, M. *Being a number*
www.atm.org.uk/mti/214/being-a-number.html

Cumbria Grid for learning *Numeracy on A Broomstick - Using a Counting Stick*
http://numeracy.cumbriagridforlearning.org.uk/index.php?category_id=55

Ellsum, D. (2007) *Two minutes of counting a day keeps the doctor away* What Works Well (2007)

http://nationalstrategies.standards.dcsf.gov.uk/node/246317?uc=force_uj

Microsite MKN 0938 - Strengthening Mathematical Knowledge
www.ncetm.org.uk/resources/24760

DCSF (2010) *Numbers and Patterns - Laying Foundations in Mathematics*
<http://nationalstrategies.standards.dcsf.gov.uk/node/273401>

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