



SSAT lead practitioners are Getting Practical!

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ABSTRACT This article describes the work and experiences of a group of nine excellent science teachers from specialist science colleges across England who successfully championed the aims of the 'Getting Practical – Improving Practical Work in Science' programme in 2009–10. The group were recruited and supported as lead practitioners on the basis of their skills and passion for science pedagogy by the Specialist Schools and Academies Trust (SSAT), a contributing partner to the programme. They successfully fulfilled their role by disseminating high-quality training and offering support to networks of schools to implement the professional development element of the Getting Practical programme.

What are SSAT lead practitioners?

Specialist Schools and Academies Trust (SSAT) lead practitioners are recognised as excellent teachers by both the SSAT and their head teachers; they are totally committed to developing their own classroom practice and that of others within the education system as part of a peer-learning model of school improvement. Their core focus is to share effective and innovative strategies that impact on classroom learning, and to support fellow practitioners in specific subject areas and pedagogy, including key areas such as improving practical work in science. Their experiences and expertise mean they are very well placed to deliver and cascade the professional development from the training element of the Getting Practical programme. The Getting Practical lead practitioners (GP LPs) are enthusiastic professionals with the energy, drive and openness to share their practice and ideas in the interests of moving science pedagogy forwards for the benefit of all learners. The SSAT's GP LPs were all recruited from specialist science colleges across England (Box 1).

SSAT Getting Practical lead practitioners' roles

Nine SSAT GP LPs, each from a different region of England (see Figure 1), attended a 'Train the trainer' event at a regional Science Learning Centre during the autumn of 2009 to familiarise themselves with the training materials and to

establish their understanding of the key messages of the Getting Practical programme. Each GP LP then took on the challenge of organising and cascading the continuous professional development (CPD), based on their own training, to two groups of colleagues involved in the front-line delivery of science in schools; these included teachers (primary and secondary), teaching assistants and technical support staff who play such a crucial role in practical science teaching.

There was an expectation that the GP LPs would deliver the training to 20 delegates each, with a group total target of 180. This proved a considerable challenge as described below; however, the final delegate number trained by the group was 22% above the target, at 219, which is a testament not only to the group's hard work and professionalism, but also to the importance of practical science to the teaching profession and their colleagues in schools.

Training the trainer

GP LPs were delighted to be part of a programme founded on robust research and were determined to ensure that they had the main Getting Practical messages clear in their minds on completing the 'Train the trainer' CPD. This was an essential prerequisite to setting up their events with any degree of confidence. They were also unanimous in stressing the need for high quality in their own initial training, plus the importance of having an opportunity away from the pressures of their

BOX 1 Specialist schools

Specialist schools are schools that work in partnership with private-sector sponsors, are supported by extra government funding and focus on those subjects that relate to their chosen specialism. Specialist science colleges, for example, have mathematics and science as their lead specialist subjects, which are expected to play leading roles in the continuous drive to raise whole-school achievement. Specialist schools must also meet the National Curriculum requirements and deliver a broad and balanced education to all pupils.

The Specialist Schools and Academies Trust (SSAT) provides high-quality practical support to specialist schools with the implementation of their specialisms in order to transform secondary education in England by building and enabling a world-class network of innovative, high-performing secondary schools in partnership with business and the wider community. The SSAT's working principles are based on the maxim 'by schools, for schools' as reflected in the role of the SSAT's Getting Practical lead practitioners providing training for colleagues from other schools in their networks.

The specialist school movement now includes around 95% of secondary schools in England and continues to be a major vehicle for school

improvement, a key contributor to national programmes and a leading innovator in the curriculum and organisation of schools.

The SSAT supports schools to attain and retain specialist status, encourage curriculum development in specialist subjects and provide networking at local, regional, national and international levels. It is these powerful organic networks that the SSAT's GP LPs largely worked with when cascading the training from this programme. There is a growing network of 376 designated specialist science colleges, including 40 colleges combining science with another specialism, and another 100 colleges that have science as a second specialism building on the strengths of their first specialism. This is a powerful network of 476 schools with the expectation that each one is at the forefront of innovation in science and mathematics teaching.

Specialist science colleges are expected to be centres of excellence in scientific, technological, enterprising and vocational education. These schools are active contributors to local and national developments within science and mathematics, such as the Getting Practical programme, and it was this expectation that enabled SSAT to recruit such high-quality teachers to the programme.

own school for getting to grips with the research behind the programme. The GP LPs were pleased with the materials and resources, and their training day was intense and packed with activities and resources for exploration and discussion. This meant they had to go through the training quickly; they knew they would soon be front-line trainers on the programme and so motivation was high:

The presentation material was great – although you did need to select/edit slightly for your own use. I changed it to include the research behind the whole Getting Practical project to contextualise its importance. (Mel Kirk, GP LP, Court Moor School)

The Getting Practical website (see *Websites*) became increasingly useful to the group at this stage, as did the support of Leigh Johnson, the project administrator at SSAT who supports this programme. The group then had to fix their

training dates on their school calendars and begin the recruitment drive to ensure that the maximum number of delegates (and indirectly learners in classrooms) benefited from the key messages from the Getting Practical programme

Impact of Getting Practical CPD 2009–10

An official independent evaluation will come from the University of London Institute of Education in due course, but as part of a two-year programme the feedback from this first group of GP LPs has been invaluable in recruiting and supporting group 2 of the SSAT's LPs for the second year of the Getting Practical programme.

Running the Getting Practical training in schools

The GP LPs were recruited very carefully, matching their strengths to the precise nature of the particular programme they would be working on. SSAT

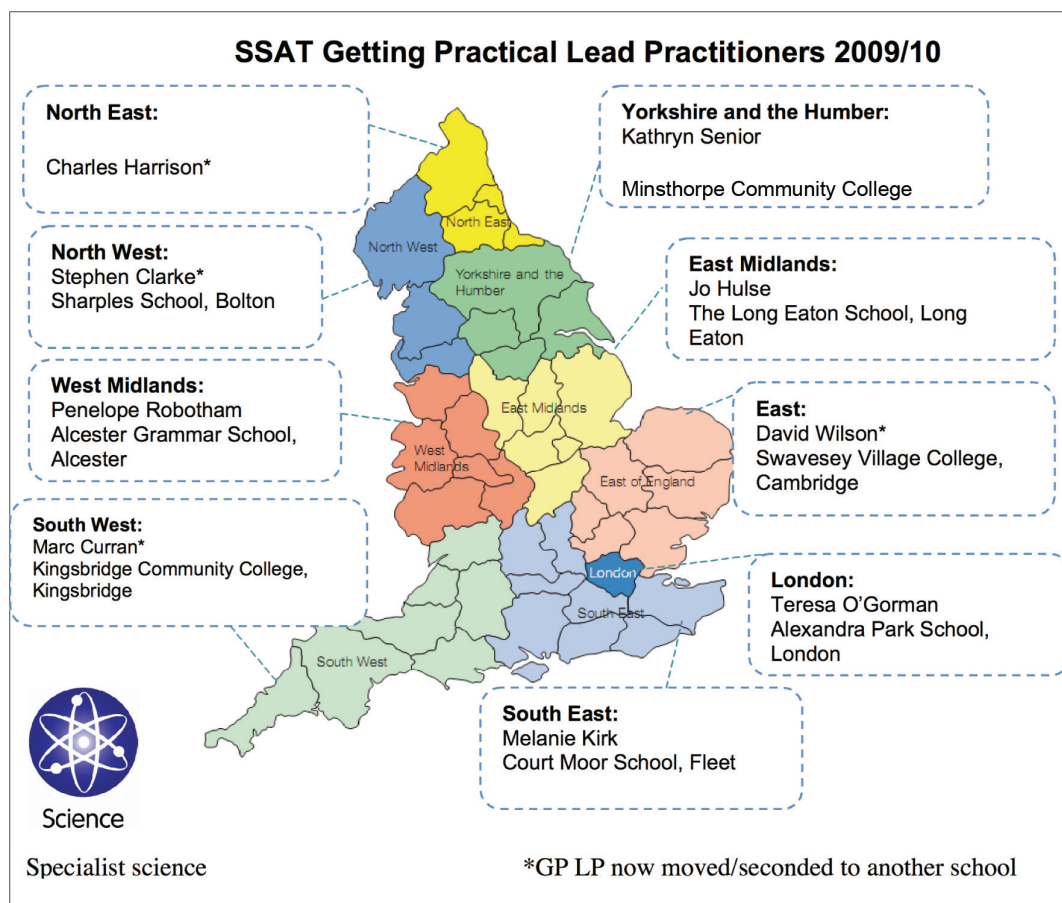


Figure 1 The Getting Practical lead practitioners in the nine regions in England

recruited colleagues not just with a passion for practical work, but with the skills and credibility to cascade well and the experience to cope under pressure if there were difficulties. The teachers selected were experienced, innovative and positive, solutions-focused people with strong existing networks through their science specialism work.

These personal qualities were essential, as they had to deal with the prevailing climate of 'rarely cover' in schools from September 2009, making it extremely difficult to recruit people to their training events, even for such an important area as practical work, as colleagues would not be able to cover for them. This picture is similar across the country where organisations, including schools, are trying to provide professional development training for colleagues.

Some GP LPs, such as Marc Curran from Kingsbridge Community School, Devon, also had

to deal with the unexpected problem of delegates withdrawing because of the volcanic eruption in Eyjafjallajökull, Iceland, and the ash clouds problem in April 2010. Delegates were unable to leave their schools for a day because they had to cover absences caused by teaching colleagues being stranded abroad on school trips. The work done during the 'Train the trainer' events at the Science Learning Centres, on different models of CPD delivery, was extremely helpful for the LPs when encountering these obstacles. The GP LP group utilised the full range of models, including whole-day, half-day and twilight models of delivery; different models worked with different networks. They adapted their training delivery model to the needs of their delegates. When GP LPs did not recruit delegates at all or insufficient delegates signed up they ran extra events to support the programme. It was very frustrating

for the GP LPs, with such high-quality training to offer, to have to work so hard to share it. There were many communications between SSAT staff and the GP LPs at this stage, as everyone pulled together to support each other with the difficult task of getting school colleagues to attend the training events.

The SSAT's GP LPs have commented on the difficulty of differentiating the delivery for the different audiences at their events when they were particularly 'mixed'. This was sometimes unavoidable, with delegates' backgrounds ranging from primary and secondary teachers to teaching assistants and technicians. However, all have praised the enthusiasm of delegates for the CPD, which is really encouraging when considered in the light of considerable recent changes in science education in terms of curriculum reform and areas such as Assessing Pupils' Progress (APP):

The participants were extremely enthusiastic. Many commented on how it complements 'How science works' (HSW) and Assessing Pupils' Progress (APP)... it makes things clearer. One head of department (attending my Getting Practical event) has been using the learning and resources from the Getting Practical CPD with her department when writing their new scheme of learning. (Jo Hulse GP LP, Long Eaton School)

There was a high impact on the primary teachers especially with the use of the diagnostic tool, which has been used by staff when planning their lessons. (Charles Harrison, GP LP, St Cuthbert's School)

Here is a representative sample of delegates' comments from the GP LP Stephen Clarke's training events at Sharples School in the North West region, which also capture the enthusiasm:

I thought the delivery of the sessions was really clear and to the point... I have learned a lot, which I will certainly implement into my lesson planning immediately.

Great! Really useful. I cannot think of any improvements needed.

Really good resources to take away and use straight away back in my school.

A very interactive and engaging session.

This positive feedback was replicated in all GP LPs' training: here are a couple of points from Teresa O'Gorman's sessions at Alexandra Park School in north London:

Very impressive training. We will also be looking into ways of sharing the messages with our own network of schools and contacts.

Enjoyed using the audit tool... a real eye opener.

Communications with these GP LPs and the messages from the evaluations of the training they ran revealed clear impact on the delegates who attended. However, there was some concern from the GP LPs that the overall impact on schools would have been even greater if more departmental decision-makers and subject leaders had attended from secondary schools, as this would strengthen the chances of a more effective cascade of the learning back in delegates' schools. Charles Harrison (GP LP, St Cuthbert's School) emphasised the importance of the professionalism of delegates in relation to the cascade process, no matter what their career stage or departmental responsibility. Nevertheless, clearly the greater the number of people trained the more chance of sustainable improvement in practice with practical work in schools.

The following sample of questions asked by delegates also illustrates the level of engagement and the high standard of discussion and thinking during the GP LPs' training events:

Do you think that this kind of reflective practitioner model is transferable to other areas of the curriculum?

Should all lesson plans have a practical objective?

Is there ever justification for using practical just for the engagement of students only?

What do you think about simulations of practicals – good or bad? Should they be used before or after an experiment?

Could this approach be applied to D&T or food technology, too?

Spreading the word

There is a continuing healthy trend towards teachers supporting each other across the educational system and a move away from the top-down model of educational transformation to a lateral model. The development of networks and communication channels between schools is becoming increasingly important and the specialist system in England promotes and facilitates this.

Delegates at lead practitioner events invariably comment in their evaluations on how the learning outcomes have been met, but also the added benefits of networking and sharing ideas and good practice for use back in their schools. All teachers want their lessons to be as effective as possible for their learners and sharing good practice is key in driving this. This networking will be essential to spreading and sustaining the messages from the Getting Practical programme beyond March 2011, with a growing number of practitioners being aware of the benefits and sharing best practice with colleagues.

It will be imperative to ensure that the Getting Practical messages remain part of the pedagogical discussions in school science departments, along with APP and the new GCSE specifications and other educational developments; the GP LPs and SSAT will continue to play an active role in this. The key message that the GP LPs have never forgotten is that this will make a significant impact on the relevance and quality of practical work in science lessons and so networks will be key in supporting the programme:

Running this CPD at Long Eaton School has definitely helped develop networks for our own science department. (Jo Hulse, GP LP)

We have existing good links with our primaries at Alexandra Park School, and this has helped reinforce them further. (Teresa O' Gorman, GP LP)

It has certainly helped the relationships with established and new schools to St Cuthbert's School's network. (Charles Harrison, GP LP)

At the end of their period in role all of the group 1 GP LPs participated in the SSAT's annual science conference at Magna in Rotherham in July 2010, which is a key event in the education calendar for science teachers. This was a chance to celebrate their success on the programme as they presented high-quality workshops on science pedagogy whilst promoting the Getting Practical programme.

Group 1's recommendations for recruitment of group 2

Having successfully fulfilled their roles as GP LPs, the first group, who have risen to the challenge and really enjoyed the experience, were keen to support and pass on their learning to the next group. They have passed on tips to the SSAT about GP LP recruitment criteria, too, including:

Think about how long they (GP LP candidates) have been in post (are they HoDs, ASTs, etc?) as this seemed to be a significant bargaining chip when trying to recruit delegates to my events. (Teresa O' Gorman, GP LP, Alexandra Park School)

SSAT GP LPs will need to be motivated, and to have already networked well in their areas. (Charles Harrison, GP LP, St Cuthbert's School)

GP LPs must already be in networks to be able to advertise the course to others. In my opinion the hardest thing was recruiting delegates (the correct delegates) onto the course. Choose LPs with an established network, e.g. ASTs, action research group members. (Mel Kirk GP LP, Court Moor School)

Recommendations to SSAT GP LPs group 2

As delegate recruitment was the most difficult part of being a GP LP, Box 2 gives a representative

BOX 2 Strategies and activities used by GP LPs for recruiting delegates

Dr Penny Robotham, GP LP, Alcester Grammar School:

- used 'word of mouth and existing contacts';
- mail shots to schools;
- e-alerts sent to all schools in 5 LAs;

Charles Harrison, GP LP, St Cuthbert's School:

- produced a flyer sent to all relevant schools;
- word of mouth and personal contacts in networks (the most effective strategy).

Stephen Clarke, GP LP, Sharples School:

- contacted LA science consultant to contact heads of department in the LA and neighbouring LAs;
- used information on the expectations of specialist schools to remind schools of the expectation that they should engage with national initiatives such as Getting Practical;
- contacted Graduate Teacher Programme Consortium and offered course as part of their core taught programme;
- gave 'taster' presentation at a SSAT regional science network meeting.

David Wilson GP LP, Swavesey Village College:

- recommends contacting your local science adviser if you have one! They have a wealth of contacts.

summary of strategies and activities used by group 1 to recruit delegates, in addition to their events being advertised on both the Getting Practical and SSAT's websites and other communication channels open to specialist schools.

Additionally, in terms of running the events in schools, group 1 strongly recommended that delegates should be asked as a pre-task for the Getting Practical training to familiarise themselves with:

- the Science Community Representing Education (SCORE) reports on practical work in science;
- Professor Robin Millar's research on practical work in the teaching and learning of science;
- the Getting Practical website.

Impact of Getting Practical programme on GP LPs

Being part of the programme has had a clear impact on the thinking of the GP LPs about their own practice and that of their departments:

I have never reflected on my own practice in terms of practical work in so much detail – particularly my motives for using it and the outcomes in terms of learning.... The Getting Practical messages apply to all learning and teaching activities. It exemplifies good practice. Do the learning outcomes meet the learning objectives or are the activities just motivators or fillers? (Jo Hulse, GP LP, Long Eaton School)

My practical work has a focus in each lesson – and we are going to have an audit across the key stages to see if we are 'missing' something or focusing on one aspect too much. I have done this personally, too – very useful. (Penny Robotham, GP LP, Alcester Grammar School)

I have used practical in a more effective way by encouraging objective-led and outcome-driven practical experiences, particularly in the run up to coursework activities, by concentrating on particular aspects of investigative science. (Stephen Clarke, GP LP, Sharples School)

I am a firm believer in using practicals within my teaching to help bring the subject alive and this course has helped me to change my practice and the practice of others locally. (David Wilson GP LP, Swavesey Village College)

I have really enjoyed being a GP LP – the connection with the SSAT has made me feel more

positive about my own skills as a teacher. It has been excellent to network with other skilled teachers and share ideas and enthusiasm for the job that we all enjoy. It has been great to feel professional! (Mel Kirk, GP LP Court Moor School)

Mel Kirk also utilised her learning on the programme towards another area of professional development, as one of the assignments for her Post Graduate Certificate in Innovation in Education, PGCIE (a Masters level course at Warwick University): 'What is the impact of the "Getting Practical" project according to Guskey's model of evaluating professional development?' Mel has also been very supportive with the development of this article.

Final comments

Experience from LP events and SSAT's CPD has consistently shown that one of the key elements for promoting change is to demonstrate that what is being proposed as better practice really is better – often by modelling or providing case studies that can be replicated easily. People change when they see that something is more effective than what they are already doing and that there will be a real dividend for learners in their own lessons. Science teachers, perhaps as a result of their scientific backgrounds, are a particularly critical group of practitioners, and sensibly will frequently only make changes to their practice when a better evidence-based model is provided. The SSAT GP LPs have done an excellent job in supporting this process of improving practical science in lessons through the Getting Practical programme, having effectively modelled good practice for delegates.

The Getting Practical programme is having a significant effect on practice in science departments across England, but changing practice takes time and effort and a critical mass of people need to be influential in advocating the process of sharing and spreading good practice. This critical mass is growing and gathering momentum though the Getting Practical programme and coupled with the power of school networks will, I am sure, become a substantial and sustainable body of professional knowledge that improves the experience of learners with practical work in science lessons throughout England. At SSAT we look forward to the second group of SSAT Getting Practical LPs playing a leading role in this

key area of science pedagogy and building on the success of Group 1.

Getting Practical courses are being offered locally and free of charge across England by Getting Practical trainers. For more information and to find out what is on offer in your region, visit the Getting Practical programme website. Teachers are invited to register their interest in attending a course near them by contacting kirstiehampton@ase.org.uk. The Getting Practical team will also be running workshops during the ASE Annual Conference in Reading in January 2011.

Getting Practical – Improving Practical Work in Science programme consortium

Getting Practical is funded by DfE with coordinating partners ASE, CLEAPSS, the national network of SLCs and CSE at Sheffield Hallam University, and contributing partners the SSAT, IOP, Society of Biology, RSC, Gatsby SEP, National STEM Centre and the University of York, with support from SCORE, the Royal Society, Gatsby SAPS, the National Strategies, LSIS, The Wellcome Trust, the Nuffield Foundation and the YSC at the Royal Institution. The independent evaluators are the IOE at the University of London.

Further reading

Abrahams, I. and Millar, R. (2008) Does practical work really work? A study of the effectiveness of practical work as a teaching and learning method in school science. *International Journal of Science Education*, **30**(14), 1945–1969.

Abrahams, I. and Millar, R. (2009) Practical work: making it more effective. *School Science Review*, **91**(334), 59–64.

Dillon, J. (2010) Effective practical science. *School Science Review*, **91**(337), 37–39.

Woodley, E. (2009) Practical work in school science – why is it important? *School Science Review*, **91**(335), 49–51.

SCORE (Science Community Representing Education) (2008) *Practical work in science: a report and proposal for a strategic framework*. London: DCSF. Available at: www.score-education.org

Websites

Getting Practical: www.gettingpractical.org.uk

Scientific Community Representing Education (SCORE): www.score-education.org/2/projects/practical_work.htm

Specialist Schools and Academies Trust (SSAT): www.ssatrust.org.uk

Steve Jones is national specialism coordinator for science at the Specialist Schools and Academies Trust (SSAT) where he heads the team responsible for supporting the specialist science colleges' network in England and matters relating to science. He also works with key stakeholders on science issues and developments and supports the SSAT's portfolio of science and STEM projects. Steve was previously SSAT's national network coordinator for science, providing support, guidance and training for science teachers and leaders of specialist science colleges. Prior to joining the SSAT, Steve was strategy manager for science at Redbridge Local Authority, London, providing support and training to schools within the Authority on pedagogy and science. He has 17 years' science teaching experience in comprehensive schools in north-east London, including the roles of head of biology and head of science faculty.