Science subject leader development materials:

Tutors' notes

Spring 2008
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Session 0

Setting the scene

Objectives
- To consider the Wave model for intervention.
- To explore different strategies to support this model of intervention.

Outcomes
Participants will have:
- explored the difference between the three models;
- identified the current practice in their department.

Resources
- Handout 0.1 (Task A – Card sort: one set of cut-up cards per pair of participants)
- Handout 0.2: The Three Wave model
- Glue sticks
- A3 paper (one sheet per pair of participants)

Guidance notes
This SLD meeting has an overarching focus on Wave 1, 2 and 3 interventions. This session sets the scene, using an activity to help teachers clarify their understanding.

Introduction
Use slides 0.2 and 0.3 to explain the objectives and outcomes for the session and how you have decided to structure the meeting.

Starter activity
Ask participants to think of the features of good intervention they have used or seen, pair with a neighbour to briefly discuss these, then share them with the rest of their table. This task is detailed on slide 0.4.
Make the following points.

- Current intervention in science is mainly focused in Years 9 and 11, and this needs to be extended to Years 7, 8 and 10. Remind subject leaders about the previous SLDM where they explored systemic and systematic intervention.

- Evidence strongly indicates that there is most impact where departments have a consistent approach to intervention coupled with good department planning.

- Few departments evaluate the impact of intervention, so most fail to appreciate that prevention is better than cure! Intervention is generally seen as an add-on rather than as part of quality first teaching.

- Although attainment is rising, conversion rates highlight issues for different groups of pupils in different schools.

- Pupils find it hard to apply what they learn in intervention programmes in their mainstream work, so this learning is not embedded.

- Teachers don’t always see the applicability of the materials to other areas of their mainstream work.

The Wave model of intervention

Use slide 0.5 and handout 0.2 to explain the Three Wave model.

Note: The Three Wave model of intervention is well established in many primary schools and has been rolled out to English and mathematics Intervention Leaders in secondary schools with considerable funding.

Task A – Card sort

This task is detailed on slide 0.6. Ask the teachers to:

- divide the A3 sheet into three columns;
- work in pairs to sort the cards (pre-cut sets of handout 0.1) into actions that they think are features of Wave 1, 2 or 3 (some cards may bridge across two columns);
- highlight the ones they do already;
- add additional interventions that they use;
- stick the cards onto the A3 sheet.

This sheet is now an 'advanced organiser' that may be added to during the rest of the meeting.

Task B – Discussion

Use slide 0.7 and ask the teachers to discuss the importance of not relying on Wave 2 and 3 interventions, and also what the features of lessons using Wave 1 intervention would look like. Take some feedback.
Plenary

Allow participants a few minutes to reflect on the tasks and the discussion. For example, are there some strategies from the card sort that they would like to develop? Have they got good examples of Wave 1 teaching in their department that ought to be shared more widely with other teachers?

They may like to annotate the advanced organiser with their thoughts. It is expected that during the rest of the meeting they will add to the advanced organiser as they identify any useful materials, ideas or questions.
Session 1

Supporting Wave 1 and 2 intervention 60 minutes

Objectives
- To review the new study guides to support intervention
- To consider how the materials might support staff development

Outcomes
Participants will have:
- identified appropriate strategies linked to their advanced organiser;
- identified the CPD potential of the study guides.

Resources
- Going for Gold: securing attainment – PDF document
- Creating a progress culture – PDF document
- Handout 1.1
- Copies of the *Strengthening teaching and learning in science through using different pedagogies* 0703-2004G and *Teaching and learning in secondary school* DfES 0423-2004

Guidance notes
The two study units *Going for Gold: securing attainment* 00760-2007BKT-EN and *Creating a progress culture* 00762-2007BKT-EN have been produced as part of the material to support the *Progressing to level 6 and beyond project*.

Both booklets mirror the style of the *Strengthening teaching and learning in science through using different pedagogies* pack 0703-2004G. Teachers can use these as self-study materials to develop their own practice or they can be used by departments or groups of teachers.

- Start small: choose one class to work with. Ask another teacher or your line manager to help by providing a sounding board for your ideas.
- Work with your science consultant on developing and planning your approach to creating a progress culture. After three weeks, meet to review how it is going. Discuss which strategies have been most effective with one class and plan how to use this with other classes.
- Find another science teacher to pair with and team teach. Design the activities together and divide the teacher’s role between you.
Session 1: Tutors’ notes

- Work with a group of teachers in the department. Use the unit as a focus for joint working, meet regularly to share ideas, then review progress after a few weeks.
- Identify the sections of the unit that are most appropriate for you, and focus on those.

**Introduction**

Use slides 1.2 and 1.3 to explain the objectives and outcomes and how you have decided to structure the session.

Use slide 1.4 to explain the structure of the two units and how they could be used. Guidance on how to use the materials is given at the start of each unit and in the management guidance in the *Strengthening teaching and learning in science through using different pedagogies* pack 0703-2004G.

If there are teachers in the department who have used the original science ‘ped pack’ materials from *Strengthening teaching and learning in science through using different pedagogies* 0703-2004G, this is an opportunity for them to share the impact and other useful guidance.

**Starter activity**

Show slide 1.5 and ask participants to discuss what they think would be the key features of schools that had good progression to level 6+ and A*/B. Take some brief feedback and compare with the list below.

**Additional guidance**

As a starting point for the guides, a number of schools across the country with good progress to A*/B were approached to identify the key features. These are listed below. It should be noted that effective schools did not have all of these features in place but what they did have was consistency of practice, strong leadership and a shared vision.

- A positive climate for learning – a ‘buzz’ in the department.
- A good match of:
  - teacher with group;
  - pupil group with pupil needs;
  - GCSE course with pupil needs.
- Well-developed progression in skills from Key Stage 2 to Key Stage 3 to Key Stage 4.
- Rigorous use of data to support the learning.
- High expectations in class, in targets set and in the scheme of work.
- A well-planned, targeted, examination preparation.
- A variety of teaching and learning approaches, including independent research and practical work to promote thinking.
- Good senior leadership support.
- The involvement of other adults, e.g. parents, carers, TAs.
## Differentiated session

Use slide 1.6 to give an overview of the two booklets. Make the point that these are two of the four study units that have been produced as part of the Progressing to level 6 and beyond project.

There are different ways that you could help participants engage with the materials in the booklets. Four possible approaches are listed below.

1. **Going for gold: securing attainment** is about Wave 2 and possibly Wave 3 intervention because it is about designing revision programmes to secure the learning of groups of pupils. Creating a progress culture focuses on Wave 1 intervention. Participants could be walked through the booklet with the opportunity to try one or two activities that you feel would be most appropriate or least familiar to participants.

   Alternatively, it could be delivered as a ‘rainbow’ activity. Each coloured group becomes the ‘expert’ in a section of the booklet. The groups re-form, with one of each colour in each of the new groups, to inform the others about their section.

2. Select some of the less familiar strategies for participants to try from the two booklets. For example:
   - reading images or collective memory from Going for gold: securing attainment;
   - homework with a difference or planning question sequences from Creating a progress culture.

3. Select activities that you know need to be developed by your departments. For example:
   - diagnostic script analysis from Going for gold: securing attainment;
   - improved understanding of learning objectives and outcomes to create challenge from Creating a progress culture.

4. Use handout 1.1 and the two guides to identify which aspects link to delivering their department priorities and which aspects are development opportunities for different members of the department.

## Plenary

Participants add notes or actions to their advanced organiser.
Session 2

Using the Classroom Quality Standards (CQS) for gifted and talented learners in science 60 minutes

Objectives
- To explore the new classroom quality standards (CQS) for science
- To consider how to use the CQS to identify shortfall in gifted and talented provision
- To consider how to use the CQS to improve standards of gifted and talented provision

Outcomes
Participants will have explored ways to use the Classroom Quality Standards to:
- audit current provision;
- encourage challenge in the classroom for all pupils;
- recognise characteristics of gifted and talented pupils.

Resources
- Handout 2.1: What do we mean by gifted and talented?
- Handout 2.2: Classroom Quality Standards
- Handout 2.3: Classroom Quality Standards in science
- Highlighter pens for the ‘traffic light’ activity

Guidance notes

Overview
The session is an opportunity for teachers to familiarise themselves with the Classroom Quality Standards that have been developed to support teachers in offering a more personalised approach for gifted and talented learners in science. These materials can form an important tool in supporting good Wave 1 or 2 interventions. Explain that Layer 2 exemplification is also being developed in the rest of the core.

Local authorities have been delivering training for Leading Teachers in Gifted and Talented Education. Whilst this session complements those materials, the focus is only on the Classroom Quality Standards as a tool to support intervention.
Additional guidance

There are three components making up the National Quality Standards.

1. Institutional Quality Standards (IQS): these are school-wide and designed to support improvements in the quality of gifted and talented education in schools and colleges as a whole. They are a tool not a task, and a tool for supporting better dialogue. The IQS have the support of QCA and NCSL and are recognised by Ofsted as the default for gifted and talented.

2. Classroom Quality Standards (CQS): these are specifically designed to improve classroom practice in gifted and talented education.

3. The LA Quality Standards: these are currently under development to help LAs in evaluating and improving their work with schools on gifted and talented.

The Quality standards self-evaluation process sits within the context of school self-evaluation and the school improvement cycle. They are arranged around the five components of personalised learning.

Introduction 10 minutes

Use slides 2.2 and 2.3 to explain the objectives and outcomes for the session.

Show slide 2.4, which summarises the five components of personalised learning. Say that personalised learning has been identified as a key educational priority, with personalising learning and teaching as a means of addressing underachievement and of ensuring all young people receive support and challenge, tailored to their needs, abilities and interests.

The five components fit together as shown in the diagram. The inner core focuses on classroom practice and needs the school to set the preconditions for learning and to remove barriers to achievement. Use slide 2.5 to add some more detail about each component.

Give participants a few minutes to consider the links between personalisation and the Waves model of intervention discussed in the introductory session. Take a few key points from around the room. Ensure that participants have clarified the link for themselves before moving on.

What are the characteristics displayed by gifted and talented (G&T) learners? 10 minutes

Show slide 2.6 and ask participants to discuss for a few moments why they should have a focus on gifted and talented pupils. Take some brief feedback.

Make the following points.

- Education should meet the needs of all pupils.
- Gifted science pupils today may be the science leaders of tomorrow.
- Raising the challenge for gifted and talented pupils can help raise standards overall.
Task A – Show slide 2.7 as a stimulus and slide 2.8 details the task. Split participants into small groups to discuss either:

- features displayed by G&T learners; or
- features not displayed by G&T learners.

Combine the two groups and ask them to compare their lists with each other and using handout 2.1. Ask groups for feedback about any features that might have caused the most discussion.

Make the point that there is no universally accepted definition of gifted and talented and that definitions can vary tremendously! Being gifted and talented is not a one-off or fixed state of existence. Joseph Renzulli’s three-ring conception of giftedness conceptualises highly productive people as having three interlocking clusters of ability, as illustrated on slide 2.9. Where the three rings overlap is said to be where gifted and talented pupils are found.

For Renzulli, above average (not necessarily exceptional) ability is necessary but not sufficient for giftedness to emerge. Also necessary are the sister qualities of task commitment (perseverance, endurance, application, practice, self-confidence, openness to constructive criticism, etc.) and creativity (fluency, flexibility and originality of thought, openness to experience, playfulness, etc.).

The features of this model were used as a basis for the science Classroom Quality Standards.

The Classroom Quality Standards

15 minutes

Use slides 2.10–2.12 and handout 2.2 to explain the purpose and structure of CQS using the notes below.

The seven features are the starting point tool in the First Layer of the CQS.

The features are designed to:

- specify the optimum conditions necessary to promote effective teaching and learning for gifted and talented pupils;
- assist an initial audit of classroom practice;
- develop specific skills to improve challenge in teaching and learning for gifted and talented learners;
- be used by teachers, support staff and learners;
- build on competences already highlighted by the Training and Development Agency for Schools, (TDA).

Each Feature in the CQS is accompanied by between two and four prompts which assist the process of self-evaluation and link directly with amplification at Layer 2. There are three Evidence columns next to the Prompts which enable practitioners to begin the process of self-evaluation.
Layer 1:
- identifies seven key features of effective support and challenge in teaching and learning;
- begins by asking classroom teachers to review their generic good practice for all learners;
- provides a set of prompts for each Feature which give practitioners the opportunity to engage with the CQS, reflect critically on their practice and evaluate their levels of confidence;
- has been designed so that schools can use it as a tool to support wider personalisation of learning and to amplify the TDA professional standards.

After reviewing their generic practice, teachers are asked to apply their findings to their gifted and talented practice in the second group of columns. Finally the Evidence columns provide a bridge to Layer 2.

Layer 2:
- has three levels – Entry (pitched to be within reach of the majority of practitioners and aligned with Ofsted’s ‘adequate’ rating), Developing and Exemplary (aligning with Ofsted’s ‘good’ and ‘outstanding’ ratings respectively);
- contains level descriptors which amplify the Features and Prompts in Layer 1, and which reflect current expectations of effective pedagogy for gifted and talented education;
- offers scope for practitioners to record their own descriptors where they identify aspects of effective teaching and learning that add to the statements;
- offers practitioners the opportunity to compare their initial self-evaluation (in the Layer 1 Evidence columns) and thereby begin to identify areas for improvement.

Ask participants to scan the generic CQS which are the rainbow-banded tables in handout 2.3 so they can see the seven Features and how Layer 1 supports Layer 2.

Task B – Show slide 2.13 and allocate one of the seven rainbow bands (Features) to different small groups to identify where the approaches to gifted and talented listed on the slide might match.

Additional guidance

What are the quality standards?

Working with a range of partners, the DCSF have developed new quality standards that ‘capture effective provision for G&T pupils’. These standards are defined by a series of descriptor targets at three levels: an entry level that all institutions and subject teachers might reasonably achieve; a developing level, highlighting the next stages for development; and an exemplary level encapsulating best practice. The levels are developed for both whole-school and classroom use.
Evidencing impact

No-one wants measurement to replace enthusiasm, least of all in G&T education, where teachers relish the opportunity to think laterally and try out new ideas. However, the value of G&T programmes cannot be validated solely by assertion. Hard evidence of impact is both important and increasingly inescapable. The enthusiasm that has fuelled and sustained the progress of the past decade now needs to be supplemented by a more rigorous approach to outcomes. It is this ‘outcomes gap’ that the institutional quality standards are intended to fill.

How will the institutional quality standards benefit our school?

The institutional quality standards are a supportive tool to help schools analyse and improve their provision for G&T pupils. There are three levels (entry, developing and exemplary) which together provide:

- a means to raise individual pupil and whole-school/college achievement;
- an accessible tool for in-depth analysis of need once G&T provision has been identified as a school priority;
- a snapshot to inform overall self-evaluation within the New Relationship with Schools agenda;
- a professional agreement on practice which is crucial for development;
- a route for improving the quality of learning and teaching;
- a mechanism to drive forward innovative practice;
- a designated level of performance which is observable through practice;
- a mechanism for evaluating provision and measuring impact;
- a means of securing personalised education for gifted and talented pupils;
- an opportunity to highlight CPD needs and areas of strength;
- a means of organising and cataloguing all resources and support for G&T provision, including CPD.

The Classroom Quality Standards in science – exemplifying Layer 2 20 minutes

Explain that core subjects have developed CQS to exemplify Layer 2.

Handout 2.3 contains the CQS for science below the generic rainbow bands. Give participants a few minutes to skim read these.

Task C is outlined on slides 2.14 and 2.15. It is important that participants are taken through the process of using Layer 1 to then drilling down from this to Layer 2 for science.

The traffic light views approach was used in the London Gifted and Talented networks. Participants can use either a ‘best-fit’ or a ‘degree of certainty’ approach to audit their own departments.

For the purposes of illustrating the process, participants need to work individually and use one of the traffic light approaches, or tick the columns on Layer 1, to quickly indicate current practice in challenge for ALL learners. Obviously, if they were undertaking the
activity for real, participants would need to consider what quantitative and qualitative evidence they would use to substantiate their self-evaluation. However their ‘gut response’ is sufficient for this part of the task.

Next, ask participants to select one of the seven features where there is generic good practice and consider whether they would evaluate the practice in the same way for gifted and talented pupils.

Now move down to Layer 2 for that same feature and use the descriptors which amplify the features and prompts in Layer 1 to more clearly identify current practice and next steps. Use the highlighter pens to give an RAG traffic-light rating.

Take brief feedback about how useful the CQS will be in identifying current practice and next steps and the link to Wave 1 intervention.

At the end of the activity make the following points.

- The CQS is not just an audit tool.
- It takes time to digest and use, so do not try to do it all at once.
- The CQS can be used to develop a shared understanding.
- The dialogue arising from using the CQS is what will move things forward.

**Plenary**  5 minutes

Refer participants back to the graphic organiser from the introductory session where they identified actions for Wave 1, 2 and 3 intervention. Allow time for them to annotate and amend the organiser in light of the session and their department priorities.