

# Assessment for Learning in science

Unit 2b: Developing written feedback  
in science





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# How the science Assessment for Learning units fit together

## Structuring learning to develop Quality First teaching



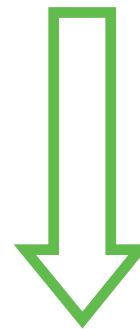
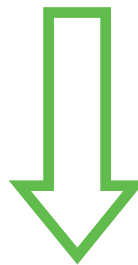
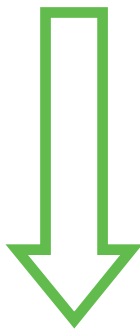
### CORE

#### Unit 1 Lesson scaffolding

Supporting structured learning through:

- learning objectives
- learning outcomes
- success criteria

### NEXT STEPS



#### Unit 2a Oral feedback

Recognising learning  
Celebrating learning  
Highlighting  
next steps in learning  
Developing  
independent learners



#### Unit 2b Written feedback

Recognising learning  
Celebrating learning  
Highlighting  
next steps in learning  
Developing  
independent learners



#### Unit 3 Peer and self-assessment

Recognising learning  
Celebrating learning  
Highlighting  
next steps in learning  
Developing  
independent learners

# Unit 2b: Developing written feedback in science

This is the third unit in a series of support materials to strengthen Assessment for Learning (AfL) in science. These materials link closely with the following quality standards developed for AfL.

## Assessment for Learning quality standards

- 2.1. All teachers have a secure and shared understanding of AfL and how it impacts on learning and standards.
- 2.3. All teachers give pupils clear feedback which identifies next steps and provide opportunities in lessons for pupils to discuss and act upon the feedback.

## Purpose of these materials

- To recognise the types of written feedback that help pupils to improve
- To focus written feedback on the learning objectives and planned learning outcomes of lessons so that pupils can see the immediate relevance of comments and judge their progress against success criteria
- To develop a strategy to provide written feedback that helps pupils to improve
- To develop teacher and pupil skills which will support the use of Assessing Pupils' Progress (APP) in Key Stage 3

## Reference material

All materials referred to are listed at the end of this document and are available to download from [www.standards.dcsf.gov.uk/nationalstrategies](http://www.standards.dcsf.gov.uk/nationalstrategies).

## Key messages

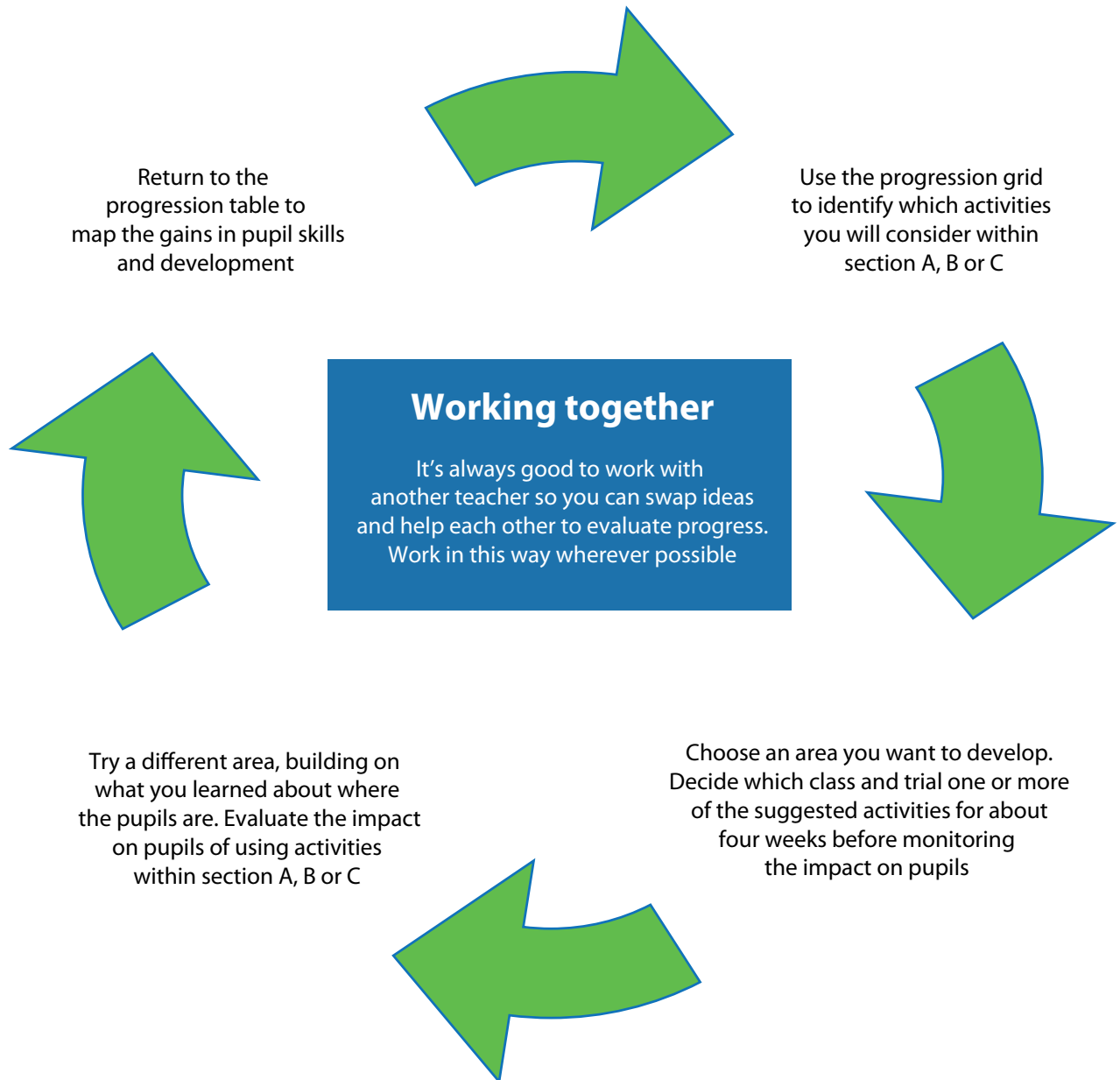
- The learning objectives and learning outcomes need to be the reference point for a teacher's written feedback. These need to be shared and made clear to pupils in advance of attempting the task.
- Effective feedback depends on the pupils being clear about what is expected of them.
- Pupils should have an expectation that the feedback they receive will explain what they have done well, with reasons, and where and how they can improve. Pupils need to understand how they can show success.
- Pupils should be given written feedback that provides clear evaluation of their strengths and weaknesses, prompts further thought and reasoning, and identifies the next steps in their learning.
- To be able to identify the next steps in pupils' learning, a teacher needs to have a secure understanding of progression in *How Science Works (HSW)* and be able to recognise pupils' misconceptions and challenges in the context science.

The following material builds on the tasks outlined in the 'Ready for more?' section of *Unit 4 Module 1: Oral feedback* from the AfL whole-school training materials. It is intended for all those who teach science.



## Cycle of professional development

The diagram explains how to use the progression grid and take the next steps to develop your expertise in written feedback.



## Reviewing existing practice in written feedback

The following progression table provides a tool for a department or an individual to review their current practice and to identify the next steps in professional development.

Start with what pupils can do in lessons, then look at what the teachers are doing. Pupils' development often lags behind that of the teacher.

## Progression table: reviewing existing practice in written feedback

Highlight the table to show which column (Focusing, Developing, Establishing or Enhancing) best describes practice in your classroom or department. Look at the pupils then the teachers. This should be based on evidence from lesson observations or pupil and teacher voice.

Identify which row(s) are in need of most development.

Go to the activities that will best support your professional development needs (A, B or C) and try the activities in the most appropriate box.

	Focusing	Developing	Establishing	Enhancing
<b>Pupils</b>	<p>They may discuss grades on work, but cannot connect the feedback with the learning objectives F1</p> <p>There are no opportunities to act upon feedback F2</p>	<p>They can see the link between written feedback and learning objectives D1</p> <p>Time is provided to read and understand feedback D2</p>	<p>They routinely act upon feedback when prompted Es1</p> <p>Evidence from their work shows progression in learning as a result of acting upon written feedback Es2</p>	<p>They discuss and independently evaluate their work as a response to the written feedback to identify ways in which they can improve En1</p> <p>It is expected that action is taken following reflection on written feedback and evidence demonstrates that improvements have been made En2</p>

Teachers	
<p>The departmental policy for providing written feedback does not relate to whole-school policy F3</p>	<p>Department policy begins to relate to the whole-school policy D3</p>
<p>A variety of disparate approaches to written feedback are being used F4</p>	<p>Comment-only approaches to written feedback are beginning to be developed D4</p>
<p>Written feedback often relates just to range and content objectives and outcomes F5</p>	<p>Written feedback increasingly relates to <i>HSW</i> objectives, although it is not clear how this relates to progression in <i>HSW</i> D5/6</p>
<p>There is no opportunity provided for feedback on <i>HSW</i> F6</p>	<p>APP criteria are used to support understanding of progression in skills in order to provide more effective feedback against <i>HSW</i> Es5/6</p>
<p>There is no opportunity in lessons for reflection on feedback F7</p>	<p>Time is routinely provided in lessons for reflection and response to written feedback Es7</p>
<p>Departmental policy and practice is consistent with whole-school policy, ensuring that written feedback focuses on improving pupil progression En3</p>	<p>Department and whole-school policies are reviewed in relation to impact of approaches. Policy is written and shared with all stakeholders (pupils, parents, teachers, support staff, governors) Es3</p>
<p>Written feedback is used routinely to support progression in learning with respect to <i>HSW</i> En4</p>	<p>Written feedback is used routinely to support pupils' progression in their learning Es4</p>
<p>Effective written feedback is given consistently to identify next steps for pupils and maximise progression En5/6</p>	<p>APP criteria are used to support understanding of progression in skills in order to provide more effective feedback against <i>HSW</i> Es5/6</p>
<p>Good lesson planning provides opportunities for independent reflection and response to written feedback on a regular basis as part of the normal lesson routine En7</p>	<p>Time is routinely provided in lessons for reflection and response to written feedback Es7</p>

	<p>There is increasing awareness of issues arising from the written feedback that influence future lesson planning</p> <p>D8</p>	<p>Issues arising from the written feedback are used to inform subsequent lesson planning</p> <p>Es8</p>	<p>Issues arising from written feedback are routinely used to inform subsequent lesson and curricular planning</p> <p>En8</p>
<p><b>A: Go to these activities to move from Focusing to Developing beginning on page 10</b></p>	<p><b>B: Go to these activities to move from Developing to Establishing beginning on page 13</b></p>	<p><b>C: Go to these activities move from Establishing to Enhancing beginning on page 16</b></p>	

## A: Activities to move from Focusing to Developing

Choose the box that you have identified from the review of the progression grid.

<p><b>Moving from F1 to D1</b></p>	<p>They may discuss grades on work, but cannot connect the feedback with the learning objectives</p> <p>F1</p>	<p>They can see the link between written feedback and learning objectives</p> <p>D1</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Share learning objectives and outcomes for each lesson with pupils, reviewing them at the end of the lesson.</li> <li>● Instead of using grades and marks as part of written feedback, use high-quality formative comments to outline pupils' strengths and areas for improvement with respect to the shared learning objectives and outcomes.</li> </ul>		
<p><b>Moving from F2 to D2</b></p>	<p>There are no opportunities to act upon feedback</p> <p>F2</p>	<p>Time is provided to read and understand feedback</p> <p>D2</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Choose a series of lessons over a month. Plan opportunities within the lessons for pupils to act upon written feedback you have given them.</li> <li>● Evaluate the effect of this within a department meeting so that further opportunities are planned using the most effective practice.</li> </ul>		
<p><b>Moving from F3 to D3</b></p>	<p>The departmental policy for providing written feedback does not relate to whole-school policy</p> <p>F3</p>	<p>Department policy begins to relate to the whole-school policy</p> <p>D3</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Review the department's written feedback policy and consider the strengths and weaknesses of its approach and of your school's approach.</li> <li>● Consider how, in your department and school, you ensure: <ul style="list-style-type: none"> <li>– consistent and shared focuses for written feedback</li> <li>– the feedback is of high quality.</li> </ul> </li> <li>● Agree any changes that need to be made and wider discussion required and/or specific actions with specific time lines.</li> </ul>		

<b>Moving from F4 to D4</b>	A variety of disparate approaches to written feedback are being used  F4	Comment-only approaches to written feedback are beginning to be developed  D4
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How do I get there?

- Interview a randomly selected group of pupils about their views on the current marking methods. Consider findings and identify strengths and weaknesses of the range of approaches for written feedback being used.
- Introduce teachers to comment-only marking, e.g. success and improvement model.
- With the department, use the same pieces of pupils' work to mark using the identified strategy. Ask people to share their improvement suggestions. This will develop into the agreed departmental approach to work to.
- At a subsequent meeting, teachers bring back pupils' work and evaluate the impact of the approach on pupils' progress in science.

<b>Moving from F5 and 6 to D5/6</b>	Written feedback often relates just to range and content objectives and outcomes  F5  There is no opportunity provided for feedback on <i>HSW</i>  F6	Written feedback increasingly relates to <i>HSW</i> objectives, although it is not clear how this relates to progression in <i>HSW</i>  D5/6
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How do I get there?

- In a department meeting, look at a sample of pupils' work from a year group alongside the relevant part of the scheme of learning.
  - How well does the work observed relate to the planned *HSW* learning objectives?
  - How effectively is the written feedback focused on the *HSW* learning objectives?
- Select a series of lessons that you will be teaching in the near future.
  - Check and plan where necessary to incorporate and sharpen the *HSW* learning objectives in your planning.
  - Share these *HSW* objectives with the pupils.
  - Inform the pupils that written feedback will relate directly to the *HSW* learning objectives.
  - Focus your written feedback on the *HSW* objectives.

<b>Moving from F7 to D7</b>	There is no opportunity in lessons for reflection on feedback  F7	Opportunities to act on feedback begin to be provided  D7
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Interview a randomly selected group of pupils about their views on feedback. Ask them how they would like to use the guidance.</li> <li>● Ask teachers to select one teaching group and plan opportunities in the following four weeks for pupils to respond to written feedback immediately work has been returned.</li> <li>● At a subsequent meeting ask teachers to bring back pupils' work and evaluate the impact of the approach on pupils' progress in science.</li> </ul>		

## Evaluation of impact

Use these activities over a period of about four weeks. Monitor the impact by reflecting on learning gains, talking to pupils, teaching assistants and other teachers about the impact. Look at progress with periodic assessments, using APP.

Check the progression grid to see if you have moved forward in your practice.

You could also ask a colleague to watch a lesson with a focus on the area you are trying to improve, and ask them for feedback.

To continue your development, adjust what you do in the next four weeks by identifying your next steps from the progression grid and moving on to the activities in section B or C.



## B: Activities to move from Developing to Establishing

Choose the box that you have identified from the review of the progression grid

<p><b>Moving from D1 to Es1</b></p>	<p>They can see the link between written feedback and learning objectives</p> <p>D1</p>	<p>They routinely act upon feedback when prompted</p> <p>Es1</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Relate written feedback clearly to learning objectives and outcomes to give pupils guidance on next steps.</li> <li>● Plan feedback to be immediate (given promptly once the task has been completed) with follow-up in the next lesson.</li> <li>● In your lesson planning, regularly include time for pupils to address these comments either on their own or in pairs.</li> </ul>		
<p><b>Moving from D2 to Es2</b></p>	<p>Time is provided to read and understand feedback</p> <p>D2</p>	<p>Evidence from their work shows progression in learning as a result of acting upon written feedback</p> <p>Es2</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Plan time in lessons routinely to provide pupils with guidance on how to improve their work following written feedback.</li> <li>● Identify <i>HSW</i> opportunities for the next term that could represent milestones in pupils' learning.</li> <li>● Share success criteria relating to assessment criteria (APP) with the pupils with explicit reference to expected standards.</li> <li>● At a subsequent meeting ask teachers to bring back pupils' work and evaluate the impact of the approach on pupils' progress in science.</li> </ul>		
<p><b>Moving from D3 to Es3</b></p>	<p>Department policy begins to relate to the whole-school policy</p> <p>D3</p>	<p>Department and whole-school policies are reviewed in relation to impact of approaches. Policy is written and shared with all stakeholders (pupils, parents, teachers, support staff, governors)</p> <p>Es3</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● At a whole-school staff INSET, review the marking policy in light of renewed emphasis on AfL and APP across the curriculum.</li> <li>● In the department, review the science marking policy to line up with whole-school policy.</li> <li>● Inform stakeholders, parents and governors of the new marking policy, outlining specifics and showing examples of expected outcomes.</li> <li>● Ensure pupils have access to the marking policy in planners/homework diaries for referral.</li> <li>● Develop a folder of work which exemplifies good marking, in conjunction with the department's feedback policy document, and which also contains samples of work at particular levels or grades. Use this to moderate marking at department meetings or when training new staff.</li> </ul>		

<p><b>Moving from D4 to Es4</b></p>	<p>Comment-only approaches to written feedback are beginning to be developed</p> <p>D4</p>	<p>Written feedback is used routinely to support pupils' progression in their learning</p> <p>Es4</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Select a series of lessons that you will be teaching in the near future. <ul style="list-style-type: none"> <li>– Identify opportunities for quality, success and improvement marking on key pieces of pupils' work for that series. Consider work from one group (range of ability) to provide a balanced representation of the understanding, misconception and needs of the whole class.</li> <li>– Ensure there is planned progression through this series of lessons in understanding and skills so that written feedback arising from each piece of work is used routinely to identify next steps and support progression.</li> </ul> </li> </ul>		
<p><b>Moving from D5/6 to Es5/6</b></p>	<p>Written feedback increasingly relates to <i>HSW</i> objectives, although it is not clear how this relates to progression in <i>HSW</i></p> <p>D5/6</p>	<p>APP criteria are used to support understanding of progression in skills in order to provide more effective feedback against <i>HSW</i></p> <p>Es5/6</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Sample pupils' work to establish whether there is evidence that <i>HSW</i> objective-based written comments are being acted upon. In pairs look at the pupils' work and evaluate the impact of focusing on <i>HSW</i> objectives.</li> <li>● Identify comments that prompt further thinking and clearly identify pupils' next steps.</li> <li>● Compare these next steps in relation to the science <i>HSW</i> Framework to support progression in skills.</li> <li>● Identify examples of good practices and agree to trial these over half a term in relation to one or two <i>HSW</i> strands (using the APP assessment criteria grid to support this).</li> </ul>		
<p><b>Moving D7 to Es7</b></p>	<p>Opportunities to act on feedback begin to be provided</p> <p>D7</p>	<p>Time is routinely provided in lessons for reflection and response to written feedback</p> <p>Es7</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Plan into schemes of learning opportunities for written feedback on pupils' own work with planned opportunities for them to respond to written feedback immediately work has been returned.</li> <li>● Review schemes of learning and pupils' work in department time to evaluate the impact of the approach on pupils' progress in science.</li> </ul>		

<b>Moving from D8 to Es8</b>	There is increasing awareness of issues arising from the written feedback that influence future lesson planning  D8	Issues arising from the written feedback are used to inform subsequent lesson planning  Es8
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Start to identify patterns in pupils' outcomes when giving feedback.</li> <li>● In department time ask teachers to share these and discuss possible causes, e.g. misconceptions, poor numeracy skills, etc.</li> <li>● Use the information gained from this analysis to review activities in subsequent lessons in order to overcome issues arising.</li> <li>● Bring back pupils' work and evaluate the impact of the approach on pupils' progress in science.</li> </ul>		

## Evaluation of impact

Use these activities over a period of about four weeks. Monitor the impact by reflecting on learning gains, talking to pupils, teaching assistants and other teachers about the impact. Look at progress with periodic assessments, using APP.

Check the progression grid to see if you have moved forward in your practice.

You could also ask a colleague to watch a lesson with a focus on the area you are trying to improve, and ask them for feedback.

To continue your development, adjust what you do in the next four weeks by identifying your next steps from the progression grid and moving on to the activities in section C.

## C: Activities to move from Establishing to Enhancing

Choose the box that you have identified from the review of the progression grid.

<p><b>Moving from Es1 to En1</b></p>	<p>They routinely act upon feedback when prompted</p> <p>Es1</p>	<p>They discuss and independently evaluate their work as a response to the written feedback to identify ways in which they can improve</p> <p>En1</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Plan opportunities for pupils, independently, in pairs or in groups, to review and evaluate their own and each other's work.</li> <li>● Provide pupils with the information they need to gauge next steps in development of skills within a context.</li> <li>● Plan rich questions, and oral and written feedback that provides challenge for pupils to help them take these steps.</li> </ul>		
<p><b>Moving from Es2 to En2</b></p>	<p>Evidence from their work shows progression in learning as a result of acting upon written feedback</p> <p>Es2</p>	<p>It is expected that action is taken following reflection on written feedback and evidence demonstrates that improvements have been made</p> <p>En2</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Show pupils success criteria specific to open <i>HSW</i> objectives and illustrate them with examples of achievements against these objectives, and also examples of improvements (from pupils' work).</li> <li>● Encourage pupils to develop their own success criteria for learning objectives or learning outcomes.</li> <li>● At a department meeting ask teachers to bring back pupils' work and evaluate the impact of the approach on pupils' progress in science.</li> </ul>		
<p><b>Moving from Es3 to En3</b></p>	<p>Department and whole-school policies are reviewed in relation to impact of approaches. Policy is written and shared with all stakeholders (pupils, parents, teachers, support staff, governors)</p> <p>Es3</p>	<p>Departmental policy and practice is consistent with whole-school policy, ensuring that written feedback focuses on improving pupil progression</p> <p>En3</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Review the 'new' department policy by discussing and analysing the relationship between the quality of written feedback and the quality of the progression made to evaluate the impact on pupils.</li> <li>● Explore any barriers and generate some possible ways forward to establish an agreed policy following the same principles as the whole-school policy but modified for the science department.</li> <li>● Agree the most significant actions taken by the department/school in supporting pupil progression and shifting pedagogy, to develop a self-supporting policy review process.</li> </ul>		

<p><b>Moving from Es4 to En4</b></p>	<p>Written feedback is used routinely to support pupils' progression in their learning</p> <p>Es4</p>	<p>Written feedback is used routinely to support progression in learning with respect to <i>HSW</i></p> <p>En4</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Identify success criteria specific to open <i>HSW</i> objectives.</li> <li>● Identify in pupils' work examples of achievements against these objectives and also examples of improvements.</li> <li>● Model or celebrate the most effective or successful examples of improvement against the APP assessment criteria.</li> </ul>		
<p><b>Moving from Es5/6 to En5/6</b></p>	<p>APP criteria are used to support understanding of progression in skills in order to provide more effective feedback against <i>HSW</i></p> <p>Es5/6</p>	<p>Effective written feedback is given consistently to identify next steps for pupils and maximise progression</p> <p>En5/6</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Agree <i>HSW</i> opportunities for the next term that could represent milestones in pupils' learning.</li> <li>● Establish success criteria that support APP assessment criteria and share these with the pupils with explicit reference to expected standards.</li> <li>● Focus your feedback on your criteria and guide pupils on how they could improve.</li> </ul>		
<p><b>Moving from Es7 to En7</b></p>	<p>Time is routinely provided in lessons for reflection and response to written feedback</p> <p>Es7</p>	<p>Good lesson planning provides opportunities for independent reflection and response to written feedback on a regular basis as part of the normal lesson routine</p> <p>En7</p>
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Within a series of lessons, routinely build in reflection time for pupils.</li> <li>● Plan opportunities for pupils to work independently or with each other to review and act upon written feedback on their own work in relation to <i>HSW</i> skills.</li> <li>● Regularly review schemes of learning and pupils' work in department time to evaluate the impact of the approach on pupils' progress in science.</li> </ul>		

<b>Moving from Es8 to En8</b>	Issues arising from the written feedback are used to inform subsequent lesson planning  Es8	Issues arising from written feedback are routinely used to inform subsequent lesson and curricular planning  En8
<p>How do I get there?</p> <ul style="list-style-type: none"> <li>● Gather information from feedback in order to analyse common areas of weakness in <i>HSW</i> skills.</li> <li>● Plan subsequent sequences of lessons to address these using guidance from the APP assessment guidelines.</li> <li>● Plan to monitor and evaluate pupils' work to ensure areas of weakness are being addressed successfully.</li> <li>● In department meetings, share information about common weaknesses to ensure curricular planning addresses these.</li> </ul>		

## Evaluation of impact

Use these activities over a period of about four weeks. Monitor the impact by reflecting on learning gains, talking to pupils, teaching assistants and other teachers about the impact. Look at progress with periodic assessments using APP.

Check the progression grid to see if you have moved forward in your practice.

You could also ask a colleague to watch a lesson with a focus on the area you are trying to improve, and ask them for feedback.

## Further information

The Framework for secondary science can be accessed at:

[www.standards.dcsf.gov.uk/nationalstrategies](http://www.standards.dcsf.gov.uk/nationalstrategies). The following related documents can be found on the same website by searching using the document name or reference number.

1. *Science APP: AFL quality standards*
2. *Assessment for Learning whole-school and subject development materials – Unit 4 Module 2: Written feedback* – Ref: 0737-2004
3. *Assessing Pupils' Progress in science* – Ref: 00036-2009
4. *Assessment for Learning in science: supporting APP* – Ref: 00932-2009

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