BUILDING ON WHAT STUDENTS ALREADY KNOW

How can I respond to students in ways that improve their learning?

Introduction

Inquiry-based teaching assumes that students do not arrive at sessions as 'blank slates', but as actively thinking people with a wide variety of skills and conceptions. Research shows that teaching is more effective when it assesses and uses prior learning so that the teaching may be adapted to the needs of students (Black & Wiliam, 1998). Prior learning may be uncovered through any activity that offers students opportunities to express their understanding and reasoning. It does not require more testing. For example, it can take the form of a single written question given at the beginning of a session to elicit a range of explanations that may then be discussed. This process, often referred to as formative assessment, may be defined as:

"… all those activities undertaken by teachers, and by their students in assessing themselves, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged. Such assessment becomes 'formative assessment' when the evidence is actually used to adapt the teaching work to meet the needs." (Black & Wiliam, 1998 para, 91)

This module considers the different ways this can be done and focuses on the following questions:

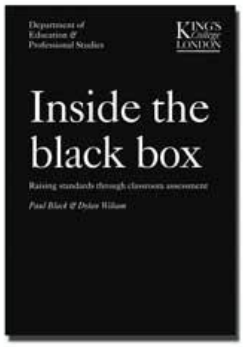
- How can problems be used to assess performance?
- How can this assessment be used to promote learning?
- What kinds of feedback are most helpful for students and which are unhelpful?
- How can students become engaged in the assessment process?

Activities

Acknowledgement:
In preparing this material, we acknowledge the permissions given by the Bowland Charitable Trust to adapt the professional development resources, *Bowland Maths*, that they had previously funded us to produce for the UK. This includes many of the handouts and most of the video extracts. Additional resources were also adapted from *Improving Learning in Mathematics*, a government funded program in the UK. The original sources are:
Swan, M; Pead, D (2008). *Professional development resources*. Bowland Maths Key Stage 3, Bowland Trust/ Department for Children, Schools and Families. Obtainable in the UK from: http://www.bowlandmaths.org.uk.
Swan, M; (2005). *Improving Learning in Mathematics*, challenges and strategies, Department for Education and Skills Standards Unit. Obtainable in the UK from http://tlp.excellencegateway.org.uk/pdf/Improving_learning_in_maths.pdf

Related research to help your planning for this module.

Black, P., & Wiliam, D. (1998). *Inside the black box: raising standards through classroom assessment*. King's College London School of Education.
Now published by GL Assessment:
http://shop.gl-assessment.co.uk

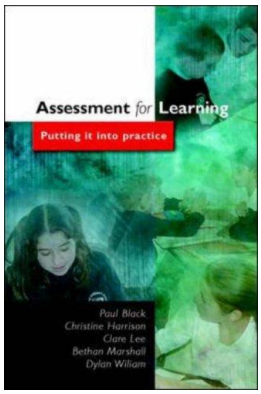


This short booklet offers a summary of the extensive research literature into formative assessment. It shows that there is clear evidence that improving formative assessment raises standards, and offers evidence showing how formative assessment may be improved. This booklet is essential reading for all teachers.

Black, P., & Harrison, C. (2002). *Working inside the black box: Assessment for learning in the classroom*. King's College London School of Education.
Now published by GL Assessment:
http://shop.gl-assessment.co.uk

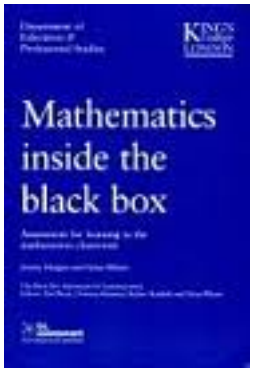
In this booklet, the authors describe a project with teachers in which they studied practical ways of implementing formative assessment strategies and the effect this had on learning. The section on feedback and marking (pages 8-9) are particularly relevant to this module.

Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2003). *Assessment for learning: Putting it into practice*. Buckingham: Open University Press.



This book gives a fuller account of the earlier booklets *Inside the black box* and *Working inside the black box*. It discusses four types of action: questioning, feedback by marking, peer- and self-assessment and the formative use of summative tests. The section on feedback and marking (pages 42-49) is particularly relevant to this module, while the section on peer and self-assessment (pp 49-53) is relevant for the next CPD module.

Hodgen, J., & Wiliam, D. (2006). *Mathematics inside the black box*. King's College London School of Education. Now published by GL Assessment:
http://shop.gl-assessment.co.uk



This booklet applies the above findings specifically to Mathematics. It considers some principles for Mathematics learning, choice of activities that promote challenge and dialogue, questioning and listening, peer discussion, feedback and marking, and self and peer assessment. This booklet is essential reading for all mathematics teachers.

ACTIVITY A: INTRODUCING FORMATIVE ASSESSMENT

Minimum time needed: 10 minutes.

The different types and purposes of assessment.

Invite participants to discuss the following issues:

- Why do you assess students?
- What different purposes do your assessments serve? Make a list.

Their list of reasons might include: diagnosing difficulties; celebrating achievement; motivating students; selecting students for classes; maintaining records to keep teachers and parents informed of progress; to assess teaching methods.

To summarize, there are two main purposes of assessment:

- *Summative assessment* - to summarise and record overall achievement at the end of a course, for promotion and certification. Most 'high stakes' tests and external examinations are designed for this purpose. Summative assessment is also used to evaluate the relative effectiveness of a particular course, teaching method, or even an institution.
- *Formative assessment* – to recognise achievements and difficulties at the beginning or during a course, so that teachers and students can take appropriate action. This type of assessment forms an integral part of all learning.

The potential of formative assessment to improve learning.

Briefly mention the research evidence that sets out the case for formative assessment. This is summarized by Black and Wiliam in several accessible publications for teachers (see opposite), most of which are freely downloadable on the internet. These researchers set out to find out whether or not improving formative assessment improves learning. "We checked many books and nine years' worth of more than 160 journals, and earlier reviews of research. This process yielded 580 articles or chapters to study. We prepared a review using material from 250 of these sources. All… studies show that… strengthening… formative assessment produces significant, and often substantial, learning gains. These studies range over ages, across several school subjects, and over several countries…" (Black and Wiliam, 1998).[1]

This module will examine the implementation of formative assessment, based on this and other research. A second module will explore the role of self and peer assessment.

[1] Paul Black and Dylan Wiliam, "Assessment and Classroom Learning," Assessment in Education, March 1998, pp. 7-74.

ACTIVITY B: TEACHERS' OWN EXPERIENCES OF FORMATIVE ASSESSMENT

Minimum time needed: 10 minutes.

What do teachers know about their students and what consequential action do they take?

Ask participants to work in pairs, considering the following questions.

- Think of two students in your class, one who is particularly strong and one who is finding the work very difficult. Take it in turns to describe the students' strengths and difficulties to your partner, in as much detail as possible.
- How did you become aware of these strengths and difficulties? On what evidence do you base your judgements? Test results? Memories of oral responses during lessons? Observations of the student working? Written work?
- In what ways do your assessments of these students affect your lesson planning? Give examples.

What difficulties do teacher encounter?

Issue participants with copies of **Handout 1**: *Difficulties with formative assessment*.

- How far are the criticisms on the handout valid in your context?
- If any are, then what may be done about them?

Handout 1 Difficulties with formative assessment

The research literature suggests that formative assessment practices are beset with problems and difficulties. These are summarised in the extensive review by Black and Wiliam (1998)[1] as follows:

Effectiveness of learning:

- Teachers' tests encourage rote and superficial learning.
- The questions and methods used are not shared between teachers, and they are not critically reviewed in relation to what they actually assess.
- There is a tendency to emphasise quantity of work and to neglect its quality in relation to learning.

Impact of assessment

- The giving of scores and the grading function are overemphasized, while the giving of useful advice and the learning function are underemphasized.
- Approaches are used in which students are compared with one another, the prime purpose of which seems to them to be competition rather than personal improvement; in consequence, assessment feedback teaches low-achieving students that they lack "ability," causing them to come to believe that they are not able to learn.

Managerial role of assessment

- Teachers' feedback to students seems to serve social and managerial functions, often at the expense of the learning function.
- Teachers are often able to predict students' results on external tests because their own tests imitate them, but at the same time teachers know too little about their learning needs.
- The collection of marks to fill in records is given higher priority than the analysis of students' work to discern learning needs; furthermore, some teachers pay no attention to the assessment records of their students' previous teachers.

ACTIVITY C: PRINCIPLES FOR FORMATIVE ASSESSMENT

Minimum time needed: 20 minutes.

Issue participants with a copy of **Handout 2**. The ideas presented here are all drawn from research into formative assessment.

- Bearing in mind the difficulties discussed in Activity B, how would you suggest that your formative assessment practices be improved?
- Discuss the principles outlined on **Handout 2**.
    - Which of these do you currently use in your own teaching?
    - Which do you find most difficult? Why?
- What other principles do you think are important?

Issue copies of **Handout 3**.

"It's all very well telling us to assess our students, but how can a busy teacher know what is going on inside 30 individual heads?"

- How would you answer this teacher?
- What strategies do you have for finding out what students are thinking in your lessons?
- Discuss the two suggestions shown on **Handout 3**, and watch the movies to see these in action.
- Suggest some further strategies for making reasoning more evident.

The two strategies described on Handout 3 and on the **movies** accompanying this activity may help to make reasoning more 'visible'.

Mini-whiteboards are an indispensable resource for the following reasons:

- When students hold their ideas up to the teacher, it is possible to see at a glance what *every* student thinks.
- During whole class discussions, they allow the teacher to ask new *kinds* of question (typically beginning: 'Show me an example of....').
- They allow students to, simultaneously, present a range of written and/or drawn responses to the teacher and to each other.

Posters are also a powerful way of helping students to externalise their thinking. This use does not require 'polished', 'complete', 'attractive' products but rather they should be seen as working documents. Perhaps the simplest way of using a poster is for students to solve a problem collaboratively, explaining the thought processes involved at every step. A second use of posters is to find out what they already know about a given topic. In the diagram shown on Handout 2, the teacher asked students to write down all they knew about $y=2x-6$. As a class, the diagram was developed on the whiteboard. Students were then given a variety of equations (the level of challenge was varied appropriately) and were asked to produce their own poster. The discussion enabled the teacher to assess how much learners knew about equations and how well they were able to link the ideas together.

Handout 2: Principles for formative assessment

Formative assessment may be defined as:

"… all those activities undertaken by teachers, and by their students in assessing themselves, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged. Such assessment becomes 'formative assessment' when the evidence is actually used to adapt the teaching work to meet the needs."
(Black & Wiliam, 1998 para, 91)

Make the objectives of the lesson explicit
Share the objectives with students and from time to time ask students to produce evidence that they can achieve these objectives.

"Make up an example to show me that you know and understand Pythagoras' theorem."
"This lesson was about you deciding what methods to use. Show me where you did this."

Students may find it difficult to appreciate that some lessons are concerned with understanding concepts, while others are more concerned with developing inquiry-based processes.
Making objectives explicit doesn't mean writing them on the board at the beginning of the lesson, but rather referring to them explicitly while students are working. If the objectives are to develop inquiry-based processes then in plenary sessions, ask students to share and compare approaches, rather than answers.

Assess groups as well as individual students
Group activities allow many opportunities to observe, listen, and question students. They help to externalise reasoning and allow the teacher to see quickly where difficulties have arisen.

Watch and listen before intervening
Before intervening in a group discussion, wait and listen. Try to follow the line of reasoning that students are taking. When you do intervene, begin by asking them to explain something. If they are unsuccessful then ask another student to help.

Use divergent assessment methods ("Show me what you know about ...").
Convergent assessment strategies are characterised by tick lists and can-do statements. The teacher asks closed questions in order to ascertain whether or not the student knows, understands or can do a predetermined thing. This is the type of assessment most used in written tests.
Divergent assessment, in contrast, involves asking open questions that allow students opportunities to describe and explain their thinking and reasoning. These questions allow students to surprise us - the outcome is not predetermined.

Give constructive, useful feedback
Research shows that responding to students' work with marks or levels is ineffective and may even obstruct learning. Quantitative feedback of this type results in students comparing marks or levels and detracts from the mathematics itself.
Instead, use qualitative oral and written comments that help students recognise what they can do, what they need to be able to do and how they might narrow the gap.

Change teaching to take account of assessment
As well as providing feedback to students, good assessment feeds forward into teaching. Be flexible and prepared to change your teaching plans in mid course as a result of what you discover.

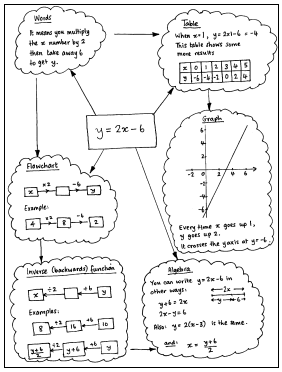
Adapted from: Improving Learning in Mathematics, Department for Education and Skills, 2005.

Handout 3: Making reasoning visible.

Use questioning with mini-whiteboards
One difficulty with normal classroom questioning is that some students dominate while others are too afraid to participate. In this strategy, every student presents a response simultaneously. When open questions are used, students are able to give different responses to those around them. The teacher is able to immediately assess which students understand the ideas and which are struggling.

Ask students to produce posters
Ask each small group of students to work together to produce a poster:

- showing their joint solution to a problem
- summarising what they know about a given topic, or
- showing two different ways to solve a given problem.
- showing the connections between a mathematical idea and other related ideas.



ACTIVITY D: ANALYSE STUDENTS' RESPONSES TO PROBLEM-SOLVING TASKS

Minimum time needed: 20 minutes

Handout 4 presents three problems together with four student responses on each. The tasks are: *Counting Trees, Cats and Kittens, Security Cameras.*

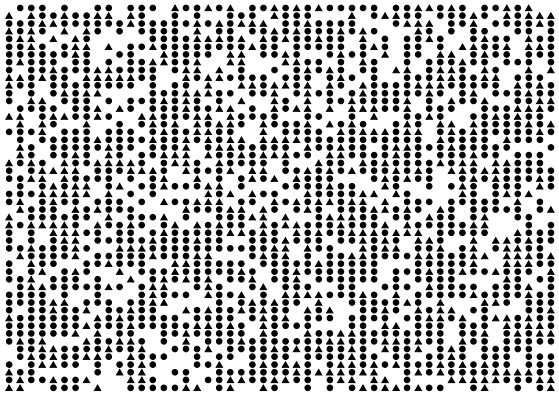
- Read through all three tasks then choose one task that will be most suitable for a class you will soon teach. If you are working on this module in a group, it will be helpful if each participant chooses the same problem, as this will facilitate the follow-up discussion.
- Consider the four student responses. What does each student's response tell you about his or her capacity to use each of the processes: *represent, analyse, interpret and evaluate, communicate and reflect*?

Handout 5 offers some comments on students' responses to each of the tasks.

- If you were the teacher of these students, what feedback would you give them, to help them improve their responses? Try to frame this help in the form of oral questions you could ask in the classroom. You may find it helpful to refer to the generic questions given on **Handout 6**.
- Watch the video of three teachers discussing the feedback they gave on the three problems.

Handout 4: Assessment tasks and sample responses

Counting Trees



This diagram shows some trees in a plantation.

The circles ● show old trees and the triangles ▲ show young trees.
Tom wants to know how many trees there are of each type, but says it would take too long counting them all, one-by-one.

1. What method could he use to estimate the number of trees of each type?
   Explain your method fully.

2. On your worksheet, use your method to estimate the number of:
   (a) Old trees
   (b) Young trees

Handout 5: Improving students' responses through questioning

Counting Trees

Sample response: Laura

Laura attempts to estimate the number of old and new trees by multiplying the number along each side of the whole diagram and then halving. She does not account for gaps nor does she realise that there are an unequal number of trees of each kind.

What questions could you ask Laura that would help her improve her response?

Sample response: Jenny

Jenny realises that sampling is needed, but she multiplies the number of young trees and old trees in the left hand column by the number of trees in the bottom row. She ignores the columns with no trees in the bottom row, so her method underestimates the total number of trees. She does, however, take account of the different numbers of old and new trees.

What questions could you ask Jenny that would help her improve her response?

Sample response: Woody

Woody uses a sample of two columns and counts the number of old and young trees. He then multiplies by 25 (half of 50 columns) to find an estimate of the total number.

What questions could you ask Woody that would help him improve his response?

Sample response: Amber

Amber chooses a representative sample and carries through her work to get a reasonable answer. She correctly uses proportional reasoning. She checks her work as she goes along by counting the gaps in the trees. Her work is clear and easy to follow.

What questions could you ask Amber that would help her improve her response?

Handout 6: Suggestions for questions

Formulate questions, choose appropriate representations and tools.	• What questions might you ask about this situation? • How can you get started on this problem? • What techniques might be useful here? • What sort of diagram might be helpful? • Can you invent a simple notation for this? • How can you simplify this problem? • What is known and what is unknown? • What assumptions might you make?
Reason logically, construct hypotheses and arguments, compute accurately	• Where have you seen something like this before? • What is fixed here, and what can you change? • What is the same and what is different here? • What would happen if I changed this.. to this...? • Is this approach going anywhere? • What will you do when you get that answer? • This is just a special case of ... what? • Can you form any hypotheses? • Can you think of any counterexamples? • What mistakes have you made? • Can you suggest a different way of doing this? • What conclusions can you make from this data? • How can you check this calculation without doing it all again? • What is a sensible way to record this?
Interpret and evaluate results obtained	• How can you best display your data? • Is it better to use this type of chart or that one? Why? • What patterns can you see in this data? • What reasons might there be for these patterns? • Can you give me a convincing argument for that statement? • Do you think that answer is reasonable? Why? • How can you be 100% sure that is true? Convince me! • What do you think of Anne's argument? Why? • Which method might be best to use here? Why?
Communicate and reflect	• What method did you use? • What other methods have you considered? • Which of your methods was the best? Why? • Which method was the quickest? • Where have you seen a problem like this before? • What methods did you use last time? Would they have worked here? • What helpful strategies have you learned for next time?

ACTIVITY E: ANALYSE STUDENTS' RESPONSES TO CONCEPT-FOCUSED TASKS

Minimum time needed: 20 minutes

On **Handout 7**, we present four mathematical topics and some sample student work on each one. Ask participants to assess each response and try to identify the reasoning that lies behind each one.

- What does the student appear to understand? Where is your evidence?
- List the errors and difficulties that are revealed by each response.
- Try to identify the thinking that lies behind each error.
- What feedback would you give to each student?

There are two common ways of reacting to pupils' errors and misconceptions:
(i) Avoid them whenever possible: "If I warn pupils about the misconceptions as I teach, they are less likely to happen. Prevention is better than cure."
(ii) Use them as learning opportunities: "I actively encourage pupils to make mistakes and learn from them.

- What is your view?

Routine practice on standard problems does little to help students overcome common mistakes and misconceptions in mathematics. This is particularly true when teachers try to avoid difficulties arising by beginning each lesson with explanations and demonstrations and following this with carefully graded questions.

Handout 8 is a one-page research review by Askew and Wiliam. This describes some research that was conducted in Britain over the past 30 years on dealing with student errors and difficulties.

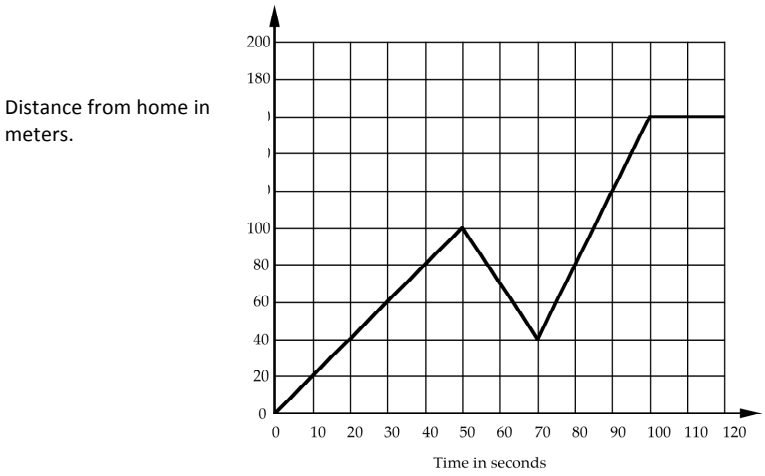
What do teachers feel about the dilemmas presented in this paper?
- is it possible to present examples where rules do not work?
- do teachers share the view that it is counter-productive to teach simpler examples before more complex examples?

Handout 7: Assessment tasks and sample responses for concepts

Interpreting a distance v time graph

Every morning Jane walks along a straight road from his home to a bus stop, a distance of 160 meters. The graph shows his journey on one particular day.

1. Describe what may have happened.
   You should include details like how fast she walked.



Jodie's response

Jane walked along a road for 100metres instead of walking another 30metres she took a short cut down an alleyway which took her 20minutes She walked very quickly then She caught the bus to her college which took about 50minutes

Maxine's response

when she get out she starts walking fast to the bus stop then she slows down the she picks up the speed again and then for the speed goes ~~cons~~ constant.

ACTIVITY F: OBSERVE FORMATIVE ASSESSMENT IN ACTION

Time needed: 15 minutes.

In this activity, you are provided with **video extracts** of Andrew, Dominic and Amy exploring how formative assessment may be used to promote students learning. They are using the three tasks from **Activity D**.

In an earlier lesson, these teachers had asked students to sit in different places and attempt one of the tasks individually, with no help. They then collected in their students' responses, assessed the work qualitatively and prepared written feedback in the form of questions. The film clips you are about to see are taken from the follow-up lesson. Students have returned to their normal places and most have solutions that are different to those of their partners.

Watch the video and consider: • What different kinds of assessment can you see? • What is the purpose of each kind of assessment? • What do both the teachers and students learn?	

In the video, you will see:

- Andrew exploring how students respond to his feedback on the "counting trees" problem;
- Amy listening to, then questioning individuals as they try to share their ideas and produce joint solutions to the "security camera" problem;
- Dominic listening to presentations from students on their methods and reasoning for the "cats and kittens" problem;
- Amy concluding her lesson by asking students to describe how they have used her feedback to improve their work.

ACTIVITY G: PLAN AND REPORT BACK ON AN ASSESSMENT LESSON

Minimum time needed: ***30 minutes before the lesson***
20 minutes for the pre-lesson assessment
30 minutes to prepare feedback
60 minutes for the lesson
15 minutes for reporting back

Planning the lesson

Plan your own lesson using one of the problems.

- Plan a time for students to tackle the problem on their own without help.
- Plan how you will assess this work, give feedback and conduct a follow up lesson.
- Collect samples of students' work to show how their thinking has changed. These will be discussed at the follow-up session.

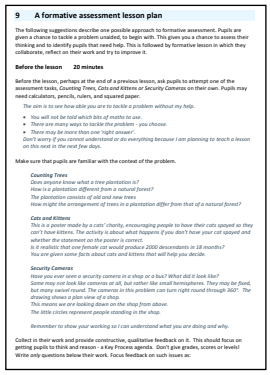
To help your planning, you may now like to watch the 10-minute video that shows Andrew teaching the Counting Trees problem from Activity D. He is following the lesson plan on Handout 9.

Andrew's lesson

The pattern of activities on handout 9 is as follows:

- Give the problem before the lesson and ask students to attempt it. (20 minutes)
- Collect in the work and prepare some constructive, qualitative feedback.
- In the follow-up lesson, reintroduce the problem to the class. (5 minutes)
- Students work alone, responding to the feedback using mini whiteboards. (5 minutes)
- Students work in pairs to improve their solutions. (10 minutes)
- Students share their approaches with the class. (15 minutes)
- Students continue with the problem or extend the problem. (20 minutes)

Handout 9: A formative assessment lesson plan



9 A formative assessment lesson plan

The following suggestions describe one possible approach to formative assessment. Pupils are given a chance to tackle a problem unaided, to begin with. This gives you a chance to assess their thinking and to identify pupils that need help. This is followed by formative lesson in which they collaborate, reflect on their work and try to improve it.

Before the lesson 20 minutes

Before the lesson, perhaps at the end of a previous lesson, ask pupils to attempt one of the assessment tasks, *Counting Trees*, *Cats and Kittens* or *Security Cameras* on their own. Pupils may need calculators, pencils, rulers, and squared paper.

The aim is to see how able you are to tackle a problem without my help.

- *You will not be told which bits of maths to use.*
- *There are many ways to tackle the problem - you choose.*
- *There may be more than one 'right answer'.*

Don't worry if you cannot understand or do everything because I am planning to teach a lesson on this next in the next few days.

Make sure that pupils are familiar with the context of the problem.

Counting Trees
Does anyone know what a tree plantation is?
How is a plantation different from a natural forest?
The plantation consists of old and new trees
How might the arrangement of trees in a plantation differ from that of a natural forest?

Cats and Kittens
This is a poster made by a cats' charity, encouraging people to have their cats spayed so they can't have kittens. The activity is about what happens if you don't have your cat spayed and whether the statement on the poster is correct.
Is it realistic that one female cat would produce 2000 descendents in 18 months?
You are given some facts about cats and kittens that will help you decide.

Security Cameras
Have you ever seen a security camera in a shop or a bus? What did it look like?
Some may not look like cameras at all, but rather like small hemispheres. They may be fixed, but many swivel round. The cameras in this problem can turn right round through 360°. The drawing shows a plan view of a shop.
This means we are looking down on the shop from above.
The little circles represent people standing in the shop.

Remember to show your working so I can understand what you are doing and why.

Collect in their work and provide constructive, qualitative feedback on it. This should focus on getting pupils to think and reason - a Key Process agenda. Don't give grades, scores or levels! Write only questions below their work. Focus feedback on such issues as:

Reporting back on the lesson

After you have taught the lesson, reflect on what happened with a group of colleagues.

Take it in turns to share stories of the assessment strategies you used.

- How did you collect and assess evidence of your students' work?
- What did you learn from this evidence?
- What did students learn from the follow-up lesson?
- What are the implications for you mathematics teaching more generally?

ACTIVITY H: CONSIDER THE EFFECTS OF FEEDBACK ON STUDENT LEARNING

Time needed: 20 minutes.

So far we have focused on the teachers' role in providing assessment feedback to students. In this activity we will consider the use students make of different types of feedback and the impact this has on their learning.

Watch the video of Andrew's students as they discuss the impact of assessment feedback on their learning.

- Which of their comments strike you as particularly perceptive and important?
- What are the implications of their comments?

Handout 10 presents some results of research from Black and Wiliam (1998) into the relative merits of feeding back assessment information to students in different forms. In particular it compares the effects of feeding back quantitative information in the form of marks, levels and rankings with the effects of offering qualitative information in the form of specific, content-focused feedback.

Compare the students' comments with the research quotes given on **Handout 9.**

The dangers of giving marks, levels, rewards and rankings

- What are the implications of this for your practice?
- What would happen if you stopped giving marks or levels on pupils' work?
- Why are so many teachers resistant to making this change?

The advantages of giving clear, specific, content-focused feedback

- What are the implications of this for your practice?
- Does this kind of feedback necessarily take much longer to give?

Research shows that students benefit most from feedback that:

- Focuses on the task, not on grades or scores.
- Is detailed rather than general.
- Explains why something is right or wrong.
- Is related to objectives
- Makes clear what has been achieved and what has not
- Suggests what the student may do next
- Offers specific strategies for improvement

Conclude this module by discussing some ways of applying what you have learned in this PD module to the other mathematics lessons that you teach.

- How could you involve pupils in improving your assessment practices?

Handout 10: The effects of feedback on student learning

Read the following two extracts from Black and Wiliam (1998) and respond to the questions that follow:

The dangers of giving marks, levels, rewards and rankings

"Where the classroom culture focuses on rewards, 'gold stars', grades or place-in-the-class ranking, then pupils look for the ways to obtain the best marks rather than at the needs of their learning which these marks ought to reflect. One reported consequence is that where they have any choice, pupils avoid difficult tasks. They also spend time and energy looking for clues to the 'right answer'. Many are reluctant to ask questions out of fear of failure. Pupils who encounter difficulties and poor results are led to believe that they lack ability, and this belief leads them to attribute their difficulties to a defect in themselves about which they cannot do a great deal. So they 'retire hurt', avoid investing effort in learning which could only lead to disappointment, and try to build up their self-esteem in other ways. Whilst the high-achievers can do well in such a culture, the overall result is to enhance the frequency and the extent of under-achievement."

- What are the implications of this for your practice?
- What would happen if you stopped giving marks or levels on pupils' work?
- Why are so many teachers resistant to making this change?

The advantages of giving clear, specific, content-focused feedback

"What is needed is a culture of success, backed by a belief that all can achieve. Formative assessment can be a powerful weapon here if it is communicated in the right way. Whilst it can help all pupils, it gives particularly good results with low achievers where it concentrates on specific problems with their work, and gives them both a clear understanding of what is wrong and achievable targets for putting it right. Pupils can accept and work with such messages, provided that they are not clouded by overtones about ability, competition and comparison with others. In summary, the message can be stated as follows:

Feedback to any pupil should be about the particular qualities of his or her work, with advice on what he or she can do to improve, and should avoid comparisons with other pupils."

- What are the implications of this for your practice?
- Does this kind of feedback necessarily take much longer to give?

Black, P., & Wiliam, D. (1998). Inside the black box : raising standards through classroom assessment. London: King's College London School of Education 1998.