

Department of
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Geography inside the black box

Assessment for learning in the
geography classroom

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The Black Box Assessment for Learning series

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Geographical
Association

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understanding potential

1. What does this booklet offer?

There is no shortage of encouragement and pressure for teachers to improve their work, raise their standards, better their students' test scores, and so on. In the past, the helpful part of such pressures often amounted to little more than the classic 'must try harder'. However, there have also been other voices offering advice on how to try harder, and advice of this kind has become part of government policy in recent years. Such advice amounts to telling teachers how they should do a better job, which is not that useful, particularly if it comes from those who do not share their everyday problems, nor an understanding of the subject being taught. Indeed, at least some of the initiatives on offer might best be seen as snake oil, in that the enthusiasm of their proponents is not matched by evidence that the initiatives will be either feasible or effective in practice.

This booklet offers advice to teachers on how to interact more effectively with students, on a day-to-day basis, promoting their learning. What is offered is backed by rigorous evidence that the initiatives proposed do actually improve students' learning achievements. The background to the ideas is explained in section 2. The specific aim here is the improvement of geography education, and so in section 3 our ideas are put in the context of the

aims and expectations of geography teaching.

The recommendations we make gain particular strength from the fact that they are grounded in the main findings of many decades of research into the principles that govern effective learning and the factors that help support the motivation and self-esteem of learners. These foundations for formative work are discussed in section 4.

Sections 5 to 8 set out in detail our findings on four main ways of practising formative assessment which we have found to be both workable and productive with geography teachers.

A closing section, section 9, discusses an approach to formulating a plan to develop formative work within a geography department in a school.

2. Background history

The findings on which this booklet is based have their origin in a review of research, published in 1998 both as a full article and in summary form as a short booklet for teachers (Black and Wiliam 1998a and b). This work established that there was strong evidence that formative assessment can raise standards of student

achievement, but that the assessment practices entailed were not implemented in most classrooms. This led the group at King's College to explore the potential for practical improvement by collaborating with a group of teachers willing to take on the risks and extra work involved, with support from their schools and their local education authorities (LEAs).

The first outcomes, which took over two years to achieve, were that almost all of the teachers were positive about the effects of the project for them, and that there were significant gains in test performance for the classes involved. The overall findings were summarised in a second short booklet for teachers (Black *et al.* 2002), and have been reported at length both in a book (Black *et al.* 2003) and in many papers in professional and research journals.

Following that project, members of the King's College team have made numerous contributions to teachers' conferences and to school and LEA in-service training. The development of formative assessment has been made a significant component of the DfES Secondary Strategy (DfES 2004), work towards which the King's College team made direct contributions.

This booklet draws upon the experiences of the King's group and also the Assessment and Examinations Working Group (AEWG)

of the Geographical Association. This group, comprising geography teachers, advisers and teacher trainers, has researched assessment and published books and papers in both professional and academic journals for over twenty years. They are responsible for the Assessment Matters column in *Teaching Geography*. Since 1998 they have increasingly focused on using formative assessment effectively in the classroom. Members of the group have contributed to the assessment section of the *Secondary Geography Handbook* (Balderstone 2006) providing insights into incorporating assessment for learning into geography teaching.

Formative assessment has both *generic* features, i.e. features which will apply to learning across all stages and all school subjects, and features which are *specific*, for example to primary teachers and to individual subjects. In this booklet, we focus on the needs and opportunities relevant to secondary geography teachers, although many of the ideas are appropriate for other subject areas and for the primary classroom.

3. Aims and the curriculum in geography teaching

In England, the content of geography lessons is currently determined by the National Curriculum, and

examination syllabuses supported by published schemes of work. There has been considerable groundswell in recent years to reshape the curriculum in geography, based on analysis of the National Curriculum and its influence (Rawling 2001; Lambert 2004; Morgan and Lambert 2005). The 'Geovisions' work of the GA (<http://www.geography.org.uk/projects/geovisionsbprs/>) has set a marker for the ways in which it is hoped that the geography curriculum will be approached and taught, so that it not only provides for the future 'geographers' in our society but also educates geographically-literate citizens. A pilot GCSE, 'Geography 21', which has been influenced by Geovisions thinking, is currently being trialled and developed in a number of schools (www.geography.org.uk/pilot).

All subjects have their 'vocabulary'. In geography, the vocabulary loading is potentially immense. In addition to a range of technical terminology, this includes every named place and feature on the face of the Earth. However, just as in developing any capability, a geographically-literate person is not someone who is simply able only to retain ('know') long lists of vocabulary – although it is true that an absence of vocabulary seriously impedes literacy. Geography requires students to use specialised vocabulary meaningfully.

To achieve this, formative assessment in geography should focus on helping students acquire and develop geographical capability.

The 'language' of geography is underpinned by the rules and insights that are contained within the following short list of guiding principles. Within these principles there are several big ideas, such as interdependence or sustainability, and a larger number of key concepts, such as 'friction of distance' or 'erosion' and 'deposition'. Arguably, it is the principles that provide overarching guidance and coherence for formative assessment. They give a sense of purpose to learning geography. They say what is special and important about geographical literacy. These can be grouped as:

- ***Physical and human connectedness***
Geography is the subject that refuses to separate natural and human made environments. Humans lead social, economic and cultural lives, but ultimately within a physical environmental context that provides both opportunities and constraints. This realisation is a powerful way into developing ideas of **sustainable development**.
- ***Place*** Geography is the subject that studies how human-environmental interactions play out – such as the

provision, supply and consumption of food, living space and work. Places, resulting from the human occupation of space, are comparable across the globe, but are also often unique in some ways. This realisation of the significance of **location** is a basis for understanding **diversity** and **uneven development**.

- **Scale** Geographical study is conscious of the significance of scale, whether the study is local, regional, national, international or global in scope. We can choose the scale of study, and the choice influences what kinds of questions are appropriate and what kind of understandings can be developed. But there is more. Geographical study usually seeks to *connect* scales, in the sense that 'no person is an island'. We all exist locally, and ultimately globally, in our consumption of energy for example and our impact on physical systems such as climate. This realisation is an essential component of understanding **interdependence**.

While curricular changes may affect the approach that teachers take to geography, the fundamental ideas or principles that we try to convey to learners remain the same. Through regulated processes, such as decision-making exercises, they can begin to work out and predict alternative scenarios, or futures, for a landscape or place. To be able to learn geography in

this way, students need help in developing process skills for investigation; and communication skills to question and discuss their findings.

Formative assessment fits well into this learning setting, since its purpose is for teachers to sift the students' responses in class discussion and activity, so that professional judgements can be made about the next steps in learning. The better a learner understands the basis of such judgements the better they can make those 'next steps'.

'Good teaching and learning' is an idea without a moral heart if the question of what is being taught and learnt is not kept under constant, professional scrutiny. The creative work of teachers is first and foremost the act of **curriculum making**. Formative assessment comes into full focus because teachers recognise that the curriculum is not merely 'content to be delivered', as if to passive recipients, but a vehicle that can help learners engage with the ideas and concepts of the subject.

This is why, in this booklet, we highlight some particular aspects of the geography curriculum experience that need to interface with formative assessment approaches. In this way, formative assessment assumes some subject specific qualities. Additional, specific examples

are shown on www.geography.org.uk/gibb, and readers are invited to add their own.

To begin with, we can capture geography's special character in the following four ways.

Using multi-modal resources

Geography depends heavily on topicality to help students develop ideas about the phenomena they experience. It is not usually considered to be effective practice if teaching and learning is over reliant on the textbook. Analysis of pictures, images, newspapers and of course digital materials on the web are very important in helping students become more aware of varied perspectives and the role of values in 'making sense of the world'. Formative assessment supports students by giving them guidance on ways to observe and question data.

Enquiry

For many geography teachers 'enquiry learning' has been one of the defining features of geography teaching for the last thirty years. 'What makes enquiry distinctly geographical is... the subject matter to which the enquiry process is applied and ... the range of questions that have been developed by geographers to investigate the world' (Roberts 2003). Formative assessment opportunities used in day-to-day teaching can develop students' knowledge and understanding of the enquiry process.

Investigative work and the outdoor classroom

If geography is about 'making sense of the world' then fieldwork is a vital part of the curriculum because the subject claims to help students understand and engage with the 'real world'. There are many significant opportunities for formative assessment to take place in the field, partly because of the nature of the activities, which are often collaborative, open-ended and demand much peer support.

Using ICT

Information and communication technology (ICT) already plays a large part in geography teaching and there are many good resources available, such as simulations of geography processes, data logging equipment and webquests. Departmental intranets can be used creatively to enhance formative assessment – for example, selective use of specific animations or 'learning objects' can be supportive, as can annotated authentic pieces of students' work, portfolios, images, etc. But perhaps the most challenging and rewarding aspect is the way Geographic Information (GI) software has changed the rules in so far as much of the routine geographic analysis and presentation is concerned. Drawing sketch maps and diagrams *may* still be a useful skill, but GI provides students with a tool to represent, discuss and analyse

data quickly and provisionally so they can ask questions and speculate about patterns. This provides many assessment for learning opportunities through teacher questioning and feedback or peer discussion.

In short, what we are saying here is that it is axiomatic for good geography to provide access to rich and varied resources, opportunities for enquiry in the 'real world' and realise the full potential of technologies to aid data handling, processing and communication. *Formative assessment strategies in geography should allow for this and be shaped by these curriculum priorities. In other words, formative assessment is focused on learning goals.*

4. Principles of learning

Of all the various opportunities for feedback in classrooms, two types are essential to formative assessment: the first is from student to teacher, the second from teacher to student. Learning is supported by alternation between these, in which each contribution responds to the other. Thus, for classroom dialogue, the starting point is a question formulated by the teacher to help students put 'on the table' the ideas which are the starting point for them. This implements the **first** principle of learning, which is to start from where the

learner is, recognising that students have to be active in reconstructing their ideas and that to merely add to those ideas an overlay of new ideas leads to poor understanding, if not to confusion.

But that is not enough; the teacher then has to encourage, and to listen carefully to, a range of responses, taking them all seriously whether they are right or wrong, to the point or zany, and helping students to talk through inconsistencies and to respond to challenges. In such discussion, the teachers are fashioning their interventions to meet the learning needs that have been made evident, but they are also implementing a **second** principle of learning, which is that students must be active in the process – learning has to be done *by* them, it cannot be done *for* them.

A **third** principle is that in order to learn, students must understand the learning target, which requires understanding of what would count as a good quality piece of work. They must also have an idea of where they stand in relation to that target. Only with these two can they achieve meta-cognition, which is the power to oversee and steer their own learning in the right direction, so that they can take responsibility for it. This is no small achievement, and teachers need to help students understand the targets of the work and the criteria of quality, so that they can tell whether the product of their

efforts does or does not meet the criteria. Peer- and self-assessment are essential here, for they promote both active involvement and practice in making judgements about the quality of work – both their own and that of fellow students.

Fourth, when students are talking about geographical ideas, whether in a whole-class dialogue or in peer groups, they are using the language of geography – the vocabulary *and* the grammar. ‘Talking the talk’ is an important part of learning. Teachers know that to serve their own learning, an INSET day must give them the opportunity to express their ideas and to try out ways in which new inputs might make sense to them and to their colleagues. The same is true for the learning of their students.

It is also important to think about how feedback affects the motivation and self-esteem of students. Feedback can be of two kinds. The **first kind** focuses on the student as a good or bad achiever, emphasising overall judgement by marks, grades, rank-order lists, and so on. This helps to develop what researchers have called ego-involvement, and its effects are negative. It discourages the low attainers, but it also makes high attainers avoid tasks if they cannot see their way to success, for failure would be seen as bad news about themselves rather than as an

opportunity to learn. In the **second kind**, the focus is not on the person but on the strengths and weaknesses of the particular piece of work, emphasising what needs to be done to improve. It is very challenging for geography teachers to break away from fairly general feedback, which is why focusing on the principles, big ideas and the development of students’ conceptual understanding is important. This second kind of feedback helps to develop task-involvement. Its effects are positive for it can encourage all students, whatever their past achievements, to see that they can do better by trying, and that they can learn from mistakes and failures (for the evidence, see Dweck 1999).

Many teachers are using ICT to enhance feedback while work is in progress, for example analysing different approaches to a question. Experience shows that students like immediate support of this kind and will often respond to it positively.

5. Questioning and dialogue in geography classrooms

Our definition of formative assessment focuses on feedback as the activity that helps learning because it provides information to be used by teachers, and by their students in assessing themselves, to modify the

teaching and learning activities in which they are engaged. For feedback to be effective it needs to arise from learning experiences that provide rich evidence so that judgements about the next step in learning can be made. There are a number of ways in which this can be achieved, but the essential ingredients are:

- challenging activities that promote thinking and discussion;
- rich questions;
- strategies to support all learners in revealing their ideas;
- opportunity for peer discussion about ideas;
- group or whole-class discussions which encourage open dialogue.

A superb source of further guidance on the role of language development and dialogue in geography can be found in Margaret Roberts' (2003) *Learning Through Enquiry*.

Challenging activities

If geography teachers want to find out what students understand in geography, rather than just what they know and can recall, then the learners need to be challenged by activities that make them think. There are a number of excellent sources for these types of activity such as Leat (1998), Taylor (2004) and articles in *Teaching Geography*.

In some cases these activities would involve applying the ideas that they already have within a new context or from a different viewpoint. In others, they would encourage the learners to use their current knowledge to make connections, predict outcomes, solve problems or appreciate different values and attitudes. The activities can take many forms in geography but generally fit into the following categories.

Comparing

What is similar and different about ...? (e.g. comparing how people interact with their environment in two countries, regions or cities, or localities).

These types of activity encourage learners to observe more carefully, to find reasons for similarities and differences and to consider why they arise. So, they apply their knowledge and understanding to the context and this both challenges their conceptual understanding and helps to develop it. What is essential in these activities is that the teacher makes it clear to the learners that the activity is to explore what they think rather than for them to guess the answer that the teacher has in his or her head. So, if the activity is to spot the odd one out in England, India and Greece, then the teacher needs to allow the learners to discuss the various possibilities before homing in on the one that he or she wants to use to exemplify the ideas.

Categorising, grouping and recognising exceptions

Why is ... an example of ...? Is it always true that ...? (e.g. investigating the spatial patterns of different types of shop; using a photograph to describe expected and unexpected features of a place).

These types of activity enable learners to test out the models and concepts that they come across in geography to see how generalisable they are and to recognise limits. They allow the teacher to check the reasons the learners have for allocating something to a group and to test understanding. So asking *Is it always true that it is sunny when there is high pressure?* is a better question than *What weather is associated with high pressure?* This is because the first question forces the learners to ask themselves other questions to find the answer and so promotes thinking, while the second question merely looks for a recall answer.

Predicting

What might happen if ...? (e.g. investigating the outcome of changing the policy on sea defences).

These types of activity encourage learners to apply their knowledge and understanding to future situations, through which they can then either test or reason their ideas. Again this technique encourages learners to bring their ideas to

the fore and so the teacher is able to gauge what they know, what they partly know and what they do not know. A very significant technique, providing geography with an overt future orientation, is to ask students to consider, and distinguish, 'possible', 'preferred' and 'likely' futures for a landscape. In each case students need to realise that justification is required for their speculations. It is this that provides the teacher with a basis for judging their reasoning.

Rich questions

Questions have a range of roles to play in the geography classroom. To exploit formative opportunities teachers should go beyond the routine of limited factual recall questions and refocus attention on the quality and the different functions of classroom questions. Teachers can find ways to use questions that encourage the higher order thought processes in Bloom's taxonomy such as application, analysis, synthesis and evaluation.

Sometimes the geography teacher needs closed questions such as *What is the capital of Japan?* to check the students' knowledge of a unit, or a term, or an example. These are not rich questions in that they usually result in one-word answers and are asking for 'facts' that are known or not known rather than asking the learner to delve deep into their

conceptual understanding. They are necessary to help the learner acquire the vocabulary of geography.

More often we need questions that demand thinking and discussion – to develop the grammar as well as the vocabulary. These are often open-ended and require learners either to link or apply ideas or give reasons why they believe something to be so. Sometimes they force the learner to ask themselves further questions to qualify what the original question is actually asking them to explain. Answers to such questions generally require one or more sentences. An example is:

In what ways might a homeless person and a tourist differ in the way they see Cambridge?

A rich, or big, question is one that cannot be answered immediately but requires the learner to work on a series of smaller questions and activities before they return to have a stab at answering it. Groups of learners should be encouraged to come up with a list of smaller questions that they will need to answer before an answer to the big question can be formulated. For example, a rich ('big') question might be:

Why are some places more suited to particular forms of renewable energy production?

The smaller questions which need to be answered are:

What is meant by renewable energy? What types of renewable energy do I know?
(knowledge and comprehension)

What physical and human conditions are needed for the different forms of renewable energy? What places in the UK are more or less suitable for different types of renewable energy?
(application and analysis)

What general principles can I propose for the location of different types of renewable energy? What information would I use to support my view? (synthesis and evaluation).

Examples of other rich questions are given by Taylor (2004) and Mack (2004).

Strategies to support all learners

Through formative questioning, the teacher hopes to collect rich evidence of the students' understandings. The aim is not simply to find out what they know but also what they do not know and possibly, more importantly, what they partly know. Teaching is about helping learners realise this and then guiding them to upgrade their part-knowledge to a fuller understanding. This distinguishes formative assessment from the assessment of learning, through which we find out what students know. Formative assessment provides ways to help students move their knowledge and understanding forward.

For formative assessment to be effective it is essential that teachers share their understanding of the important ideas in geography with their students. For example 'rich questions' should explicitly recognise the interaction between the physical and human world that is central to the school geography curriculum and in responding to students' answers teachers can emphasise the importance of this interaction.

Demanding questions require time for the learner to work out an answer. For some questions and with some types of learner this can be achieved by increasing the wait time (the time between a teacher asking a question and taking an answer). Rowe (1974) found that the wait time in primary classes was very low, often less than one second. In secondary classrooms recent research found that teachers could, with practice, increase their wait time to around 3 to 5 seconds and this had dramatic effects on the involvement of their students in classroom discussion (Black *et al.* 2003). The research showed that:

- longer answers were given than previously;
- more students were choosing to answer;
- fewer students refused to answer;
- students commented on or added to the answers of other students;
- more alternative explanations or examples were offered.

In many classrooms, even when the wait time is increased, there is reluctance from some learners to offer answers. To engage more learners in answering, a number of techniques have been developed. Some teachers forced learners to contribute by asking them to jot down an answer either on a piece of paper or on a mini-whiteboard, so that when asked by the teacher, the student would either read out or hold up their answer. Other teachers adopted a 'no hands up' strategy, taking the view that if sufficient wait time was given, then everyone should be expected to answer and so the teachers selected individuals to respond.

Opportunity for peer discussion

Creating a classroom culture in which students feel they can reveal current understanding and be helped to firmer understanding, is an essential ingredient to making formative assessment function in the classroom. Peer discussion plays an important part in creating a supportive environment that encourages positive student interaction. The opportunity to discuss ideas within a small group helps students articulate and check ideas before they reveal their group's answer to the whole class. The group activity allows better formed answers, and if an answer is incorrect or limited, then individuals are less threatened because it is a collective decision.

Encouraging students to speculate about images of places in pairs or larger peer groups can give them the confidence to communicate what they know, partly know and do not know about a place or issue. The assessment for learning outcome from this process is a better understanding by both student and teacher of misconceptions that can be worked on in the future.

Thinking skills activities such as geographical 'mysteries' are excellent for promoting peer discussion since they encourage learners to work out their personal values and attitudes towards the moral dilemma presented in the mystery. In the process of making sense of the mystery students can develop their knowledge and understanding of both the 'vocabulary' and 'language' of geography. Other thinking skills activities such as 'Odd One Out', 'Living Graphs' or 'Most Likely To' that require students to explain their reasoning to each other help them achieve better understanding and create a classroom environment where formative assessment enables learning. Effective debriefing provides immediate feedback that helps students identify their 'next steps' and gives the teacher information about where to go next (see Leat 1998; and Nicholls, in Balderstone 2006: 180–95).

Encouraging open discussion

Students are often reluctant to commit to an answer because they do not want to reveal their inadequacies to the teacher and to their peers. The teacher's role when formative questions are asked is to act as a facilitator and encourage students to try to answer and also to listen carefully to the answers from their peers.

Sometimes questions can be used to encourage learners to reflect on both what they think and what they have heard from others. This is an essential stage in shaping understanding. Examples are:

What can we add to Yagnesh's answer?

Which parts of Suzie's answer would you agree with?

Can someone improve on Jack's answer?

Where else might we find Amy's idea working?

What sort of evidence would challenge Sally's idea?

Are Sonia's and Tariq's ideas the same or different?

This is not an easy role to play for some teachers. Learners will look to the teacher to pass judgement on answers either by comment, facial expression or body language. While it is important to sort out wrong-headed ideas, teachers need to be

patient and wait for the various ideas and thoughts to be revealed before they start correcting and curbing the direction of the discussion.

If intervention comes too soon, then not only do many of the misplaced ideas fail to be revealed but there may be too little opportunity for the learner to reflect on what is being discussed alongside what they think.

6. Feedback

Feedback from teachers, orally or written, is an essential part of formative assessment. Many teachers involved in developing formative assessment look for opportunities to increase oral feedback in their classrooms and some suggestions for achieving this have been outlined above. It is in this way that concerns of 'formative assessment' and 'pedagogy' become indistinguishable.

Teachers might also consider whether the most common form of feedback they give individual students is through their marking.

Marking which results in grades or marks out of ten is problematic for formative purposes. Most teachers use marks to *sum up* students' work. This is a quick

recording device for the teacher, often simply meaning 'has done the work asked, and got most of it correct'. There is little sense here of a cumulative learning process. It is more like a mini summative assessment and marking over a period of time becomes a serial summative assessment.

Research shows that marks have no place in a *formative* environment for the following reasons:

- Learners do not get advice on how their work can be improved.
- Marks emphasise competition not personal improvement. This discourages collaborative learning.
- Marks demotivate low attainers and give no challenge to high attainers.

Teachers often compromise by using marks and comments. However, research (Butler 1987) indicates that this is a waste of time on the teacher's part because the students focus only on the marks and fail to read the comments which could provide advice for improvement. Effective feedback should help the learners know where they are and where they should go next: the focus is improvement. Where teachers tried to achieve this, using marks and comments, the advice tended to be too brief and related to the reason for awarding the mark rather than

improvement (e.g. *Excellent, More detail needed, A good effort, Write in sentences, Draw larger diagrams*).

This is the central dilemma in changing practice. On the one hand, written comments are the most common way for the teacher to have a dialogue with everyone in the class. On the other hand, most comments are either unhelpful or not used by students. Teachers therefore have to develop strategies that make comments more effective in developing students' learning and find ways to engage the students in the dialogue.

Creating the improving classroom

The opportunity to react to, and act on, comments is essential, particularly when formative ideas are being introduced to classes. The learners need to see that the teacher really does want a piece of work improved and that improvement is being monitored. This means providing an opportunity *in lesson time* for learners to read comments on their work and to discuss with their teacher or their peers which specific improvements are needed. In many instances, it is also useful to allow time for the improvements to be made in class.

The classroom culture needed to support the learner involves success and a belief that all learners can achieve. While this can help all students, it gives particularly

good results with low attainers, where it concentrates on specific problems with their work. Comments help the learner understand what is wrong, give them appropriate targets and a means of achieving these in the short term. It is essential that the message within the feedback focuses on achievement and improvement of specific pieces of work to avoid such learners losing sight of their goal or being inhibited from attempting it because of overtones of 'ability', comparison and competition.

A simple method that can improve work through comment-only marking is to attach the top of an A4 sheet of paper into the back cover of the learner's book. Each time a piece of work is comment-marked, the learner slips the sheet between the appropriate pages of their book. The teacher adds comments onto the sheet of paper. The sheet then contains an accumulation of comments and allows both the learner and teacher to recognise where improvements have been made or where specific problems are arising. If the learner is encouraged to respond, this comment sheet can become *a written dialogue between the teacher and the learner* where feedback drives formative action.

One method of finding the correct balance and tone to encourage redrafting and further improvement is 'two stars and a wish'. For example:

Your definition of a depression is accurate and the diagram is clear. Now you need to explain how the weather changes as the warm and cold fronts pass over.

Another method that can be used occasionally with important pieces of work involves reading all of the student's written work through very carefully before making any annotation. Next, highlight three places in the writing where the student best met the learning intention(s) of the activity. Then indicate with a star where an improvement can be made to the original work. Draw an arrow to a suitable space near the star and write a 'close the gap' prompt to support the student in making an improvement to their work.

In response to the question 'Compare the population structure of Senegal and France' a student wrote:

*In Senegal there seems to be lots more kids than there is adults because they don't have much protection from pregnancies and there is a low life span so there isn't many old people. **

The teacher's 'close the gap' comment emphasises that comparisons need to use data from both countries.

To compare patterns in two countries you need to use data from both places. Can you describe the differences in the population patterns of Senegal AND FRANCE?

The most important part of the process is that the student is then required to engage with the 'close the gap' comment. Time must be provided in class to enable students to read and respond to this comment or for the teacher to follow up individual needs with specific students 'face to face'. Finally, the teacher can provide reinforcement by commenting upon improvement in the learner's work at the first available opportunity.

Effective comments

Comments take a long time to write and for some activities they are of little use. Some tasks simply need checking to ensure learners have transferred the information from their textbook or the board into their own books. Checking does not usually need teacher expertise and so for this type of task it is possible to use *self-checking*, peer-assessment, or *sample checking* by the teacher of perhaps a third of the books each week. Finding the right balance between comment-marking and checking work not only provides the time for devising useful comments, it begins to move the responsibility for involvement

in assessment onto the shoulders of the learners. This is an important step towards the development and encouragement of self-assessment.

Useful comments, written every two to three weeks, are more helpful than a mark on every piece of work. Some activities are easier to comment on than others, because these activities are challenging and often require reasoning rather than simple recall. Teachers can manage the process by reassessing their schemes of work to ensure that there are enough of these types of activity reasonably spaced throughout the topic. This makes the marking load more manageable for teachers, provides regular guidance to students and allows time to work on improvement before the next detailed feedback. Further discussion of planning for assessment in geography schemes of work can be found in Hopkin, Telfer and Butt (2000).

Activities that require more extended writing will be more useful than tasks that produce one-word or single-sentence answers. The text provides the teacher with a richer source of evidence about the leading edge of learning for individual students so more focused advice on their work can be given. While initially there might be some resistance to extended writing, experience has shown that students can

come to realise that these types of activity provide the starting point for the teacher to coach them towards higher attainment.

Questions are useful ways of framing comments. Compare these two comments:

Add notes on the pattern of population density.

Where are the most crowded and least crowded places? Can you suggest why some places are more crowded (densely populated) than others?

Whereas the first comment gives the student a task to perform to improve his or her work, the second comment initiates thinking immediately. This enables the learner to discuss his or her thoughts either with the teacher or a peer and its questioning nature encourages the student to initiate improvement. The first comment simply describes a deficit in the piece of work.

In many cases an effective comment relates back to the success criteria or descriptions of quality that have been shared with or devised by the students before they attempt a task. In this way students work towards success or quality by considering the criteria as their work progresses. The feedback is then the teacher's judgement, which can be matched against the student's own judgement of quality.

Sometimes directing students where to go for help and what to do to improve can be effective.

- *Look back at the map and use the atlas to give the names of countries where there are car factories.*
- *You are mixing up the terms primary, secondary and tertiary industry. First check your glossary for explanations of these terms, then see if you can rewrite this paragraph using the terms correctly.*

Departmental intranets and virtual learning environments have immense potential to support this kind of *iterative process* between teachers and students, based on the analysis of authentic pieces of work or extracts of work. The use of reviewing and comment procedures in word processing packages lets teachers engage in a dialogue with students as activities are undertaken and encourages students to engage more effectively with teacher comments. This type of activity is an excellent motivator and encourages students to take more responsibility for their own learning within a classroom that fosters improvement.

7. Self- and peer-assessment

Teachers can create wonderful lessons by facilitating debates on ideas and providing guidance on the next learning steps but it is only the

learner who can do the learning; it cannot be done for them by the teacher. In other words, students need to be able to self-assess.

This is not a simple task, as it requires the student to have a sufficiently clear picture of the targets in the learning trajectory ahead of them and a means of moving forward to close the learning gap. In some classrooms, students do not have this clear picture and respond to lessons as a set of exercises to be completed. In this scenario, the students are not engaged with the learning as a longer-term or cumulative process. Self-assessment strategies help students become more involved through a deeper awareness of goals.

Teachers have found that peer-assessment helps students develop their self-assessment skills. Students have the ability to recognise both quality and inadequacies in other students' work even if the level of competence that they themselves are performing at is different from the level of work that they are reading. With careful coaching, always using criteria, students can begin to develop awareness of success and of problem areas in specific pieces of work and to articulate these to each other. They develop a language to help them discuss their work with one another, and provide feedback. Peer discussion enables each

student to see the strengths and weaknesses of *their own* work with greater clarity. Such practice also encourages students to improve pieces of work as they begin to see how small changes, additions or different ways of approaching parts of the work can easily raise the quality. It is the regular small pushes forward that help embed better learning behaviours and raise overall attainment.

Developing peer-assessment

As with other formative assessment techniques, students need training and practice. Starting in a small way and evolving their practice gradually is the best way forward. One method involves simple checking of work. Once a week students can swap books and check for specific items such as correct spelling of keywords for the topic, or that maps have titles, direction arrows, a key and a scale. They can then write a comment which states at least one good point and, if possible, one aspect to look out for in future work.

Once this becomes a regular part of practice, they can move on to looking for specific criteria in a piece of extended writing. In a unit on sustainable communities the criteria might be:

- introductory paragraph that identifies the question(s) to be answered – (what does this paragraph need to include?);
- sketch map to show the location and main features of the place being studied – (what makes a map better?);
- table that identifies the sustainable and non-sustainable features of the place – (what makes a table better?);
- conclusion that uses the term ‘sustainable community’ appropriately, and suggests ways that the place could be developed in the future (the best answers will present different viewpoints and synthesise all the ideas).

In pairs, the pieces of writing are swapped and peers mark (annotate) each other’s. They write a summary of their responses to the work according to the four criteria. In other words they have to analyse the writing. This helps them learn more about the criteria and deepen their knowledge of the topic. In some instances this approach has included the teacher’s own response, paired with a student, not to produce a model answer but to model an approach to learning which is open and negotiated. The teacher’s answer is usually ‘good’ in many respects, but not perfect. The teacher only marks the work of the one student while that student marks the teacher’s work. When the work is returned students read and discuss the comments that have been written in their books. Some students may be selected to read out the comments in their books and to say whether they agreed with their partner’s judgement or not. Where there is

a discrepancy, specific parts of the work are shown to others and the quality discussed openly. The teacher has the role of moderator – and if needed, final authority.

The activities outlined here are illustrations of the types of processes that may be helpful if students are successfully to acquire the habits and skills of collaborative learning and, through peer-assessment, develop the skills required for self-assessment. As with all learning, some students acquire the skills quickly, while others take longer to understand the process. Research suggests the students who improve their performance most from approaches identified here are low achievers who may have a history of repeated failure and a lack of clarity about what they have to do to improve. High achievers may show relatively less improvement because they tend to be those students who are self-motivated and already able to use self-assessment more successfully. However, all learners benefit from explicit understanding of the criteria. These both *guide* the process of self-assessment and are *better understood through* the process of self-assessment.

Traffic lights

Traffic lights can also be used for peer-assessment. For example, if students are studying 'environmental pressures' they might be asked to carry out their own

resource enquiry. Students may research different issues and produce a presentation. In groups of five the presentations are peer-assessed using the following coding:

- green – better than I could have done, and I learnt a lot from this talk;
- amber – about the same quality as I could do;
- red – some parts seem to be missing or incorrect.

After all the presentations, a discussion about the judgements made allows students to justify their judgements and develop a shared understanding of what quality means for each of the mini-topics. The formative action is for red or amber talks to be reworked and written up at green level. Students awarded green for their talk have to rework one of the other talks to a green level.

For some teachers, allowing students to make these judgements is difficult, because one student's misunderstanding may be fed to another. To alleviate this problem, teachers need to choose group members carefully and to monitor the talks and discussions of traffic-light judgements. Moving the learning onto the students' shoulders allows the teacher time to intervene and sort out problems with groups as they occur. What is significant is that any misconceptions or

incomplete understanding are out in the open – better this than students silently not ‘getting it’.

Some teachers have used traffic-light icons to help develop self-assessment skills. Students label their work green, amber or red according to whether they think they have good, partial or little understanding. Clearly, if many students assign red to a piece of work, then it may need revisiting or tackling in a different way. Conversely, a plethora of greens indicates that understanding is good and the class is ready to move on to more challenging work. A mixture of reds, greens and ambers calls for different action and teachers might pair up green and amber students to talk about the work, leaving themselves free to deal with the more serious problems that the red students are having. The teacher can thus map the pace and content of future work according to the students’ confidence levels and needs. Practice is required in order to use such a system effectively and it needs to be integrated into classroom life for it to become normalised and understood.

Enquiry

Enquiry learning provides the pedagogy, and the classroom circumstances, in which to develop self- and peer-assessment. Some teachers introduce and develop

enquiry skills by considering individual processes or doing part- or mini-enquiries. This approach provides the opportunity for groups to look at samples of their own work or the work of others, and so develop understanding of the enquiry processes through peer learning and assessment.

Alternatively, teachers can build formative processes into the framework of a ‘big project’. The enquiry is introduced by outlining the task, enquiry questions, possible outcomes and the criteria by which the work will be judged. To help students contextualise and understand the criteria, teachers can ask groups to look at samples of work produced previously, reach judgements about quality and give guidance about next steps. As the enquiry develops, understanding can be reinforced if opportunities are built in for self- and peer-assessment of progress.

Integrating formative assessment strategies can therefore become an important learning tool during those years in Key Stage 3 when summative examinations are not looming so large. Taking a formative approach to enquiry enables teachers to work at developing students’ self-assessment skills so that these are in place when students come to perform investigations for summative purposes.

8. Formative use of summative tests

Considerable money and expertise has been used to develop the summative examinations.

Teachers can use both external examinations, and tests they have constructed themselves, as tools to be employed formatively in the classroom.

The experience of the teachers in the King's College formative assessment project (Black *et al.* 2003) is a useful starting point for considering this issue. Some teachers stopped their customary habit of explaining the marking scheme when tests were returned and instead analysed the tests to see which specific questions were causing most problems for their classes. They then used the time after marking to rework the ideas behind the difficult questions and to give further examples of these for their students to try. For other test questions, where only a few students had answered incorrectly, students were told to find someone in the class who had answered correctly and get them to explain how they had arrived at their answer. In other words the teacher dealt with serious gaps in understanding but smaller gaps could be closed through peer activity.

One teacher decided to give his class the end-of-topic test in the first lesson of the

topic so that the students could inform him of what they knew, partly knew and did not know. Students then used traffic-light icons as follows:

- green – studied this topic and think I can answer this question correctly;
- amber – studied this topic but not certain I can answer it correctly;
- red – never studied this topic.

For some questions almost all of the students labelled them green and so the teacher decided that there was no need to teach that specific idea since the students claimed to understand it already. The teacher then adjusted his run of lessons to work on the red and amber ideas in the topic. This method provided him with more time to work on areas that students were unfamiliar with or that they found difficult. When the test was given at the end of the topic, the teacher found that the students had been correct in their judgements and had managed to answer the green questions, even though very little lesson time had been spent on them in the weeks running up to the test. He also found that the average mark for the class had risen significantly when compared with similar classes in the same year and with the teacher's same-aged class in the previous year. Again, pace and content of the teaching was matched to students' needs and so learning also was more focused.

Some classes used traffic-light icons to focus revision for external tests. Students would use traffic lights on test items and then form groups to work on specific problem areas together. Others used traffic lights on examination syllabuses to help them see where they needed to put effort into the revision. Through these activities students became involved in an active review of their work which enabled them to plan their revision for high stake tests more effectively.

9. Learning together: learning from others

The development of practice recommended here is not easily achieved. It may require changes in the ways teachers work with students, which may seem risky, and which will certainly be challenging. Teachers and students will use resources differently; questions in class might change; the expectations of students (and parents) may need to change as evaluation of one's work takes centre stage. Furthermore, some of what is advocated here may seem to be contrary to some aspects of faculty or school policy. Indeed, what is involved is best seen as a voyage of discovery, a journey into new territories of teaching and learning. For such a voyage, one needs the support of companions.

Our experience shows that those taking on the development of formative

assessment need to work in a team. That team must have a plan. The first essential for such a plan is that it has support from the faculty and/or the school. This may involve special dispensation to depart from some school rules on (say) frequent testing or recording of marks in students' books. But the vital element is that the team find time to talk with one another at length, to share experiences, successes and disappointments, and also to observe one another's classroom work. They should also have access to outside advice, whether from their LA or from others with experience in formative work.

The plan would identify a strategy, over a period of at least a year, to develop formative assessment activities as a means to enhance geographical literacy. *In this way subject-focused CPD, may again become a reality, underpinning for many what is becoming known as the new professionalism.*

A first step in carrying out a plan could be an audit to determine what aspects of formative assessment are already being achieved. A next step might be to review various possible changes, and to decide which of them to try at the outset – for to attempt several new practices at once would be too demanding. The whole team might try the same activity, or different members might start with different activities. The plan may also include provision for trial and evaluation

of chosen innovations – perhaps trialled with selected groups in the first instance.

Evaluation is a vital part of any plan. This should be ongoing, in terms of mutual observation and of sharing of ideas and resources. It might also be summative at certain stages, when evidence of experience and test results of students might be collected, and perhaps supplemented by observations from colleagues not directly involved.

This should lead on to a final part of the plan, which is to envisage means of dissemination – to all in the faculty, and perhaps to and with other faculties in the school as a whole.

Conclusion

The ‘new professionalism’ mentioned above involves, at its best, a whole community of practice. There are thousands of geography teachers who, in their different contexts, share an ultimate common interest in developing effective pedagogies through formative assessment. As we have been at pains to emphasise, the prior issue that really unites them is the geography. This booklet may be a useful ‘way in’ to learning together way beyond the walls of your school, via the books, journals, website and conferences of the Geographical Association.

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Assessment for learning is any assessment for which the first priority in its design and practice is to serve the purpose of promoting students' learning. It thus differs from assessment designed primarily to serve the purposes of accountability, or of ranking, or of certifying competence.

An assessment activity can help learning if it provides information to be used as feedback, by teachers, and by their students, in assessing themselves and each other, 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 learning needs.

This publication rests heavily on the pioneering booklet by Paul Black and Dylan Wiliam, *Inside the Black Box*, and

subsequent work from the Assessment Reform Group. It attempts to blend what we know about the power of formative assessment with a restatement of the educational purpose of geography. Supporting material and examples relating to the matters raised here can be found on the Geographical Association's website www.geography.org.uk/gibb

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