4 Putting the ideas into practice

Four types of action

In this chapter, we describe teaching and learning practices that emerged from our project as both practical and rewarding. Some were introduced by us and others were invented by the project teachers; however, all were explored and transformed in the interplay between the King’s team and the teachers and between the teachers themselves.

The King’s, Medway, Oxfordshire Formative Assessment Project (KMO-FAP) set out to help teachers transform formative assessment ideas gleaned from research studies into working practice in the classroom. The ideas that motivated the teachers to change their practice were initially drawn from the four areas suggested in Inside the Black Box (Black and Wiliam 1998b):

- questioning;
- feedback;
- sharing criteria;
- self-assessment.

Over the course of the project, as teachers moved forward with their ideas they began developing and reshaping strategies. They found some ideas functioned better than others at bringing about changes in their classrooms which they found productive, and through their work on such experiences they were able to transform the implementation of formative assessment. One factor that influenced their decisions about what to try and what to develop was the context in which they found themselves. This was because they were having to make judgements about how formative assessment could be implemented within the constraints of their own assessment procedures and those of their school. These judgements had implications both for what they considered possible to attempt but also for the emphasis that they felt they should place on the different components of their assessment practices. By the end of the
project, two of the original areas were still evident as distinct and specific areas in which to develop formative assessment practices; these were questioning and feedback. Both areas were pivotal in improving communication links between the teachers and their students about the assessment aspects of their work. Also, these areas had parts to play in many aspects of teaching, from face-to-face discussions to judging students’ responses to feedback on written work. While the project revealed greater detail about how questioning and feedback played out in different classrooms, the principles underlying these two remained unscathed.

The other two, sharing criteria with learners and self-assessment, came to be understood differently. Sharing criteria with learners did have a role to play in formative assessment, but the ways in which this was approached meant that it served several other areas rather than standing alone alongside the other practices. It was subsumed into both the feedback and self-assessment categories: with feedback, criteria came to represent the framework from which teachers evolved appropriate comments to provide information to learners about achievement and for improvement; with self-assessment, it formed the framework that helped learners decide both how to make judgements about their own work and how to structure or detail their next piece of work.

Development of self-assessment was approached through the development of peer-assessment practices in the teachers’ classrooms. Through the habits and skills of collaboration in peer-assessment, students were helped to develop the objectivity required for effective self-assessment, which gave them both a concept of what quality meant in a specific context and also the motivation to seek improvement.

As the project developed it became clear that the formative use of summative tests had an important part to play. Given the evidence of the harmful influence that narrow ‘high-stakes’ summative tests can have on teaching (Assessment Reform Group 2002), some have argued that formative and summative assessments are so different in purpose that they have to be kept apart. However, our teachers found it unrealistic to practise such separation and so sought to achieve a more positive relationship between the two, at least for those tests where the teacher has control over when and how they are used.

The outcome of these developments was that the project’s main contribution was to take forward formative practice in four areas:

- questioning;
- feedback through marking;
- peer- and self-assessment by students;
- the formative use of summative tests.

The following sections look at the detail of how these four approaches were worked on and developed by the twenty-four science and mathematics
teachers who began working on the KMOFAP project in February 1999, and the twelve teachers of English who began a year and a half later.

**Questioning**

Teachers recognize that questioning is an essential part of their practice. To focus our teachers on the difference that changes in their questioning might make to classroom interactions, we introduced them to the results of research on ‘wait time’ (Rowe 1974). This study in elementary science classes in the USA investigated classroom discourse and found that the mean time that teachers waited between asking a question and, if no answer was forthcoming, intervening again was only 0.9 seconds. When discussing this study, the KMOFAP teachers recognized that a wait time of less than one second prevented most students taking part in the classroom discourse. Such a short interval allowed insufficient time for them to think and then to formulate an answer. The teachers realized that they compromised by asking simple, closed questions where recall rather than thinking provides the answer. As a consequence, the dialogue was at a superficial level. Most of the teachers agreed that, in a bid to motivate the class and remind them of the previous lesson, they should start their lessons with a question-and-answer (Q&A) session of around 5 minutes, with the focus on remembering key words from previous work. This was substantiated by the classroom observations in the first few weeks of the project.

As one teacher described it:

I’d become dissatisfied with the closed Q&A style that my unthinking teaching had fallen into, and I would frequently be lazy in my acceptance of right answers and sometimes even tacit complicity with a class to make sure none of us had to work too hard [. . .] They and I knew that if the Q&A wasn’t going smoothly, I’d change the question, answer it myself or only seek answers from the ‘brighter students’. There must have been times (still are?) where an outside observer would see my lessons as a small discussion group surrounded by many sleepy onlookers.

I had always been wary of wrong answers. How do you respond to a child who willingly, enthusiastically puts their hand up, and every time has picked up the wrong end of the stick (or even a different stick altogether)? I want to encourage children to answer in class, but I need to challenge incorrect responses, so I’d usually end up with a lame ‘That’s an interesting way of looking at it’, or ‘Hmm, not quite what I had in mind’. No-one learnt anything from this exchange except the willing student, who gradually learnt to be less willing.

(James, Two Bishops School)
Rowe (1974) went on to look at the effect of increasing the ‘wait time’. She found the following changes associated with the classroom discourse:

- answers were longer;
- failure to respond decreased;
- responses were more confident;
- students challenged and/or improved the answers of other students;
- more alternative explanations were offered.

The teachers identified these changes in classroom discourse as desirable and tried over the following few weeks to increase the wait time in their lessons. In fact, to begin with the teachers were unable to increase their wait time above a few seconds and talked of ‘unbearable silences’ and concerns about ‘kids switching off’ or ‘misbehaving’ if the wait time was extended. Many teachers initially found it hard to increase their wait times – they had to break established habits and, as they changed, the expectations of their students were challenged:

Increasing waiting time after asking questions proved difficult to start with – due to my habitual desire to ‘add’ something almost immediately after asking the original question. The pause after asking the question was sometimes ‘painful’. It felt unnatural to have such a seemingly ‘dead’ period but I persevered. Given more thinking time, students seemed to realize that a more thoughtful answer was required. Now, after many months of changing my style of questioning I have noticed that most students will give an answer and an explanation (where necessary) without additional prompting.

(Derek, Century Island School)

Other teachers also persevered and came to see value in their changed approach to classroom questioning:

I chose a year 8 middle band group and really started to think about the type of questions I was asking – were they just instant one word answers, what were they testing – knowledge or understanding, was I giving the class enough time to answer the question, was I quickly accepting the correct answer, was I asking the girl to explain her answer, how was I dealing with the wrong answer? When I really stopped to think, I realized that I could make a very large difference to the girls’ learning by using all their answers to govern the pace and content of the lesson.

(Gwen, Waterford School)
To support the development of more effective question-and-answer sessions in the classroom, we introduced workshops on developing questioning skills in the second INSET at King’s. In separate science and mathematics groups, the teachers considered a number of questions and considered how such questions might play out in the classroom discourse. They thought about the potential each question might have to promote thinking and discussion and predicted the types and varieties of answers that these questions might evoke from their classes. In this way, the teachers were able to identify questions that had formative potential. They were also helped to anticipate how they might refine and handle such questions in their classes and so were able to think ahead about where particular questions might lead. These issues also arose in later INSETs, where teachers shared and honed practice through peer support.

Not until you analyse your own questioning do you realize how poor it can be. I found myself using questions to fill time and asking questions which required little thought from the students. When talking to students, particularly those who are experiencing difficulties, it is important to ask questions which get them thinking about the topic and will allow them to make the next step in the learning process. Simply directing them to the ‘correct answer’ is not useful.

(Derek, Century Island School)

Discussions about particular questions helped the teachers gain confidence in using them in the classroom. By anticipating students’ reaction to a question, and by hearing the views of other colleagues, teachers were helped to judge the suitability of questions and to modify them to fit the task in hand. So a question like ‘Some people describe friction as the opposite of slipperiness. Do you agree or disagree?’ was quickly changed to ‘Some people describe friction as the opposite of slipperiness. What do you think?’ Through such changes, students were encouraged to give thoughtful answers rather than simply to agree or disagree and then face the prospect of justifying their decision when they perhaps had reached that decision without sufficient thought as to why.

Other questions were considered useful in developing student reflection and promoting discussion. Examples of these would be:

- What do you think of Yagnesh’s answer?
- What could we add to Suzie’s answer?
- Dean said . . . and Monica thought . . . but how can we bring all these ideas together?

Focusing on what students said rather than on accepting an answer and moving on created enhanced opportunity for sustained discussion.
teachers thought it essential to encourage students to listen to and comment on answers being given by their peers, while at the same time ensuring that they feel comfortable in answering in the public domain of the classroom.

Increasing the wait time can lead to more students being involved in question-and-answer discussions and to an increase in the length of their replies. One particular way to increase participation is to ask students to brainstorm ideas, perhaps in pairs, for two to three minutes before the teacher asks for contributions. This allows students to voice their ideas, hear other ideas and articulate a considered answer rather than jumping in to utter the first thing that comes into their head in the hope that it is what the teacher is seeking. Overall, a consequence of such changes was that teachers learnt more about the pre-knowledge and understanding of their students, and about any gaps and misconceptions in that knowledge and understanding, so that their next moves could address the learners’ real needs.

To exploit such changes, it is necessary to move away from the routine of limited factual questions and to re-focus attention on the quality and the different functions of classroom questions. An example is the use of a ‘big question’: an open question, or a problem-solving task, which can set the scene for a lesson, either by evoking a broad-ranging discussion or by prompting small group discussions, so involving many students. However, if this is to be productive, both the responses that the task might evoke and ways of following up these responses have to be anticipated. One teacher described an example of such a question:

Nowadays, when we start a new unit, we start by looking at what we already know. This might be by having an in-depth question and answer session – with open-ended, challenging questions – such as, ‘If plants need sunlight to make food, how come the biggest plants don’t grow in deserts, where it’s sunny all the time?’ A far better lead in to the recall of photosynthesis than ‘What is the equation for photosynthesis?’ The former question allows all those students who don’t even remember the word photosynthesis to begin formulating ideas and to be part of a discussion which gradually separates those who do remember and understand photosynthesis from those who don’t.

(Philip, Century Island School; teacher’s emphasis)

The following two transcripts exemplify the change in the classroom culture of one of the science teachers as he worked on improving questioning as a formative tool in his classroom. The first transcript records an episode in September 1999, the second an episode in April 2000, some 8 months into the implementation phase of the project. Both transcripts form the start
of a year seven (11- to 12-year-olds) lesson that moves onto a practical activity; however, the purpose of the teacher through his questioning differs between the two lessons and the experience for the learners is markedly different.

The first episode is an extract from a lesson about electricity:

Teacher: Right. I want everyone to concentrate now, because you need some information before you start today’s experiment. Okay today we are going to find out about these . . .

*Holds up an ammeter.*

Teacher: Anyone know what we call these and where you might find one?

*Starts to walk round and show groups the ammeter.*

Two hands go up in the class.

Teacher: Look carefully. Where have you seen something like this? You might have seen something like it before. What is it involved with? It’s got a special name . . .

*Three more hands go up. The teacher selects one of these students.*

Teacher: Yes . . . Jay?

Jay: In electricity, sir.

Teacher: That’s right. You can use these in electric circuits. Anyone know what it is called? This word here helps. Can you read what it says?

Carolyn?

Teacher: Amps.

Teacher: And what is this instrument called that measures in amps?

*Pause of 2 seconds. No hands go up.*

Teacher: No? No-one? Well, it’s an ammeter because it measures in Amps?

What’s it called, Jamie?

Jamie: A clock, sir.

Teacher: You weren’t listening Jamie. It might look like a clock but it is called an . . .?

*The teacher pauses and looks round class. Six hands shoot up.*

Teacher: Nearly. Carolyn?

Carolyn: An ammeter.

Teacher: That’s right. An ammeter. And where do we find these ammeters?

Monica?

*Monica shrugs her shoulders.*

*Six children have their hands raised.*

Teacher: No idea. Tell her Rebecca.

Rebecca: In electric circuits.
Teacher: Good. I am starting to spot which of you are sleeping today. Are we with it now Monica?

Monica nods.

Teacher: Right. Now we are going to use these ammeters in our practical today and so gather round and I will show you how it works. Quietly please.

The students had been studying electric circuits for 2 weeks before this lesson and were familiar with the setting up of series and parallel circuits, but the teacher does not try to elicit their understanding in this extract. Instead, he engages in conversation with a few children to see if they can guess the two facts which he has in his head and which he wants them to grasp before they begin their experiment. The teacher’s questioning is closed in nature. He wants to check that students know what things are called and where you find them. He plays a fast pace question-and-answer game, in which some students, like Carolyn and Rebecca, score points because they guess what the teacher wants them to say. Richard tries and nearly gets things right, while Jamie and Monica are highlighted for not paying attention.

The extract was discussed with the teacher as part of a discussion of the lesson by a visiting researcher. The teacher had felt uneasy during this part of the lesson because he thought more students would have known what an ammeter was and he also felt that several students, including Jamie and Monica, were not listening. He decided that he needed to work on the start to his lessons to involve more students in the question-and-answer sessions.

Over the next few months, this teacher worked on his concerns about wait time, about the small numbers of students who normally took part in whole-class question-and-answer sessions, and about dealing with incorrect answers rather than ignoring them. These were addressed by radical changes in the rules and conventions of his classroom. This second extract, from a lesson about photosynthesis, was taken some 7 months later:

Teacher: We are going to look at the way plants feed today. I know you’ve done some work on this in your primary school and I am going to give you time to think that over and to tell your neighbour about what you know, or think you know already.

Students start looking at one another and a few whispers are heard.

Teacher: Hang on. Not yet. I want to give you something to think about.

The teacher produces two geranium plants from behind his desk. One is healthy and large and the other is quite spindly.

Teacher: Now when Mrs James potted up these two plants last spring, they were about the same size but look at them now. I think they might have been growing in different places in her prep room. I also think it’s got something to do with the way that plants feed. So have a
think, then talk to your partner. Why do you think these plants have grown differently?

The class erupts into loud discussion in pairs. The teacher goes over to sidebench and checks apparatus. After 4 minutes, the teacher returns to the front and stops the class discussion.

Teacher: Okay. Ideas?

About half the class put up their hands. Teacher waits for 3 seconds. A few more hands go up.

Teacher: Monica – your group? Pair?

Monica: That one’s grown bigger because it was on the window. [Pointing]

Teacher: On the window? Mmm. What do you think Jamie?

Jamie: We thought that . . .

Teacher: You thought . . .?

Jamie: That the big ‘un had eaten up more light.

Teacher: I think I know what Monica and Jamie are getting at, but can anyone put the ideas together? Window – Light – Plants?

Again about half the class put up their hands. The teacher chooses a child who has not put up his hand.

Teacher: Richard.

Richard: Err yes. We thought, me and Dean, that it had grown bigger because it was getting more food.

Some students stretch their hand up higher. The teacher points to Susan and nods.

Susan: No it grows where there’s a lot of light and that’s near the window.

Teacher: Mmmm. Richard and Dean think the plant’s getting more food. Susan . . . and Stacey as well? Yes. Susan thinks it’s because this plant is getting more light. What do others think? Tariq.

Tariq: It’s the light cos its photosynthesis. Plants feed by photosynthesis.

The teacher writes photosynthesis on the board.

Teacher: Who else has heard this word before?

The teacher points to the board.

Almost all hands go up.

Teacher: Okay. Well can anyone put Plant, Light, Window and Photosynthesis together and tell me why these two plants have grown differently?

The teacher waits 12 seconds. Ten hands went up immediately he stopped speaking. Five more go up in the pause.

Teacher: Okay. Carolyn?

Carolyn: The plant . . . The big plant has been getting more light by the window and cos plants make their own food by photosynthesis, it’s . . .

Jamie: Bigger.
Teacher: Thanks Jamie. What do others think about Carolyn’s idea?

Many students nod.

Teacher: Yes it’s bigger because it has more light and can photosynthesize more. So Richard and Dean, how does your idea fit in with this?

Dean: It was wrong sir.

Richard: No it wasn’t. We meant that. Photosynthesis. Plant food.

Dean: Yeah.

Teacher: So. Can you tell us your idea again but use the word photosynthesis as well this time?

Richard: Photosynthesis is what plants do when they feed and get bigger.

Teacher: Not bad. Remember that when we come to look at explaining the experiment that we are going to do today.

This extract shows a marked difference in the way that the teacher approaches questioning. He is no longer seeking terms and descriptions but rather trying to explore students’ understanding. He creates opportunities for the students to exchange ideas, articulate their thoughts and to fashion answers in a supportive environment. Wait time is greatly extended and this encourages more students to participate and think of answers. The students’ answers are longer and contain indications of their conceptual understanding rather than of their knowledge of names and terms.

The way that students participate in the classroom dialogue has changed. Jamie and Monica are much more involved in the question-and-answer session; this is particularly apparent when Jamie completes Carolyn’s answer, indicating that he is both listening and thinking about what is being said. The answers suggest that students feel that their answers will be considered seriously by the teacher and any ambiguities or discrepancies pursued, such as when the teacher puts up Richard and Dean’s answer along with Susan’s answer for the class to consider. The aim is not for discrete right answers to be celebrated, but for a discussion of the ideas to be explored. The teacher no longer uses questioning in the way that he did in the electricity lesson, to support classroom management through revealing those students who fail to listen or refrain from taking part. Instead, questioning is used to elicit student understanding and promote shared learning in the photosynthesis lesson.

Questioning has been a continuing developmental theme throughout the project and has resulted in both teachers and their students changing their approaches in the classroom. The teachers report that they now spend more time preparing quality questions, have richer student involvement and use incorrect answers from both classwork and homework as discussion points to be taken up by the whole class. Questions are often devised to challenge common misconceptions, to create some conflict that requires discussion, or to explore ambiguity that needs clarification before an accepted answer can be formulated. Students are given time to think and sometimes to discuss their
thoughts with peers, and then anyone might be asked to respond. Group responsibility is given a high profile in many of the classrooms so that mistakes can be shared and rectified and answers reached collectively and collaboratively. Students are therefore more ready to offer answers and to attempt difficult aspects, as they know that others will help them if they falter. So collaboration has emerged as the accepted community practice. There can also be effects on other parts of their work, as one teacher reported:

There have been two very positive results from this approach. The most significant one is that because they have to explain their answers each time orally, this has carried through to their written work and now they set out their answers fully without being prompted. The second one is with a girl with a statement for being unable to talk or communicate with an adult. Having got used to the extra thinking time, she now offers answers orally and will now tentatively explain her answers.

(Gwen, Waterford School)

One teacher summarized the overall effects of her efforts to improve the use of question-and-answer dialogue in the classroom as follows:

**Questioning**
My whole teaching style has become more interactive. Instead of showing how to find solutions, a question is asked and students given time to explore answers together. My year 8 target class is now well-used to this way of working. I find myself using this method more and more with other groups.

**No hands**
Unless specifically asked, students know not to put their hands up if they know the answer to a question. All students are expected to be able to answer at any time, even if it is an ‘I don’t know’.

**Supportive climate**
Students are comfortable with giving a wrong answer. They know that these can be as useful as correct ones. They are happy for other students to help explore their wrong answers further.

(Nancy, Riverside School)

Like Nancy, many of the teachers in the project followed the suggestion of one of the group that it would be important to suppress the usual practice of having students put up their hands to volunteer to answer; they thereby discouraged the impulse to compete. Students’ involvement in questioning took
many forms: one of the ways to encourage this was to create opportunities for students to ask questions about pieces of work. The following example from one of the English classrooms illustrates this approach.

The students were eventually going to engage in a piece of autobiographical writing. The lesson entailed giving a year 7 mixed-ability class a brief passage called ‘The Sick Boy’, which the teacher had adapted, from Laurie Lee’s novel *Cider With Rosie*, so that it was devoid of detail of any kind, giving the barest outline of events with little attention to the vocabulary or, to use the technical term, lexical density. The students were asked to annotate the text with any questions they would like to put to the author to make the text more interesting. The ideas were shared with partners as the teacher went around the class listening to the questions and prompting students to think of further ideas.

The questions were then collected and discussed by the class as a whole. The class were then read the actual extract from Laurie Lee’s book and the students were asked to see how many of the questions were answered in the original text. This too was discussed. The lesson ended and was followed by another lesson immediately after lunch in which the questions were categorized as factual, such as ‘what was someone’s name?’, or as reactional empathetic, such as ‘how did this make the mother feel?’ Lee’s passage answered both types of question. These types of question were then used as the basis for the criteria by which the students’ work was to be assessed. In other words, the teacher made explicit, as they began to write, that the features they had identified as helping to make a piece of writing more interesting would be the features by which their own work would be judged.

This lesson was early on in the sequence of lessons and demonstrates both how assessment informs planning and how students can become involved in the assessment process, albeit in a more subtle way. It is in effect an indication of how consideration of the criteria for success on the final piece of assessed work, and of ways to share these explicitly with the students, should form an important part of the planning process.

Questioning became an essential feature of the teachers’ classrooms as questions were devised and used to promote thinking. This led to richer discourse, in which the teachers evoked a wealth of information from which to judge the current understanding of their students. More importantly, they had evidence on which to plan the next steps in learning so that the challenge and pace of lessons could be directed by formative assessment evidence rather than simply following some prescribed agenda. The task of improving questioning is a complex and gradual process, which involves the teacher in taking risks. More effort has to be spent in framing questions that are worth asking – that is, questions which explore issues that are critical to the development of students’ understanding. Time has to be given to pursue students’ ideas and rectify shortfalls. This involves creating or finding
follow-up activities that are rich, in that they provide opportunities to ensure that meaningful interventions which extend the students’ understanding can take place.

Overall, the main suggestions for action that have emerged from the teachers’ innovations are:

- More effort has to be spent in framing questions that are worth asking; that is, questions which explore issues that are critical to the development of students’ understanding.
- Wait time has to be increased to several seconds to allow students time to think and everyone should be expected to have an answer and to contribute to the discussion. Then all answers, right or wrong, can be used to develop understanding. The aim is thoughtful improvement rather than getting it right first time.
- Follow-up activities have to be rich, in that they provide opportunities to ensure that meaningful interventions that extend the students’ understanding can take place.

Put simply, the only point of asking questions is to raise issues about which the teacher needs information or about which the students need to think.

Where such changes have been made, experience has shown that students become more active as participants and come to realize that learning may depend less on their capacity to spot the right answer and more on their readiness to express and discuss their own understanding. One teacher viewed the effects as follows:

They have commented on the fact that they think I am more interested in the general way to get to an answer than a specific solution and when Clare [Lee] interviewed them they decided this was so that they could apply their understanding in a wider sense.

(Belinda, Cornbury Estate School)

Feedback by marking

The second area in which the KMOFAP developed formative practices was feedback. An essential part of formative assessment is feedback to the learner, both to assess their current achievement and to indicate what the next steps in their learning trajectory should be. Just as the work on questioning brought out the importance of oral feedback, so for written feedback we introduced several relevant studies to the teachers. The one that created most discussion and influenced their work in this area was a study carried out by Ruth Butler and published in 1988.
Butler was interested in the type of feedback that students received on their written work. In a controlled experimental study, she set up three different ways of feedback to learners – marks, comments and a combination of marks and comments. The latter is the method by which most teachers provide feedback to their learners in the UK. The study showed that learning gains were greatest for the group given only comments, with the other two treatments showing no gains. Some of the teachers were shocked by these findings and initially could not envisage how marking by comments only would be possible in their schools. Other teachers in the group were goaded by their initial reaction to the research findings to try and make sense why and how comment-only marking might raise achievement. The study therefore created ‘cognitive conflict’ for some of the teachers, which led them to discuss and debate with colleagues to attempt to resolve their conflict. However, the study created cognitive inhibition for other teachers, who felt that their school situation prevented them even considering the proposed practice – feedback by comments without marks – as a possibility for them.

Those teachers who were able to discuss the possibilities of implementing comment-only marking were able to justify this practice from their classroom experiences in the following ways:

- students rarely read comments, preferring to compare marks with peers as their first reaction on getting work back;
- teachers rarely give students time in class to read comments that are written on work and probably few, if any, students return to consider these at home;
- often the comments are brief and/or not specific, for example ‘Details?’;
- the same written comments frequently recur in a student’s book, implying that students do not take note of or act on the comments.

Such reflections on their practice, together with the impetus to seek change from the Butler study, encouraged the teachers to envisage how feedback might be used differently in their classrooms. This involved more than not giving a mark or grade. It involved finding the best way to communicate to the learners about what they had achieved and what they needed to work on next. It was also about engendering behaviours in the learners that would lead them to take action on the feedback and about providing a support system that fostered this approach. One teacher reported her experience as follows:

My marking has developed from comments with targets and grades, which is the school policy, to comments and targets only. Students do work on targets and corrections more productively if no grades are given. Clare [Lee] observed on several occasions how little time
students spend reading my comments if there were grades given as well. My routine is now, in my target class, to: (i) not give grades, only comments; (ii) comments highlight what has been done well and what needs further work; (iii) the minimum follow-up work expected to be completed next time I mark the books.

(Nancy, Riverside School)

The way forward differed for each of the teachers and it seemed essential that each found practices that worked for them. So the honing of practice in individual classrooms was as important as the initial development of the idea. For some teachers, it was finding a new format for feedback that worked for them, while others focused on their classroom routines.

The project began guiding this change by first interviewing students in three of the schools and investigating their reaction to the way that their books were marked and the value they attached to the feedback comments that they received. The very clear messages from the students were that they wanted their teachers:

- to not use red pen because students felt that it ruined their work;
- to write legibly so that the comments could be read;
- to write statements that could be understood.

These messages were communicated to the teachers and, through discussion with project colleagues, they began to work on producing quality comments that could direct and motivate their students to improve their work. For example, a comment such as ‘give more detail’ may mean nothing to students if they cannot distinguish between relevant and irrelevant detail. Collaboration between the teachers in sharing examples of effective comments was helpful and experience led to more efficient fluency.

Most of the comments that we saw at the start of the project either stated a general evaluation, which indicated neither what had been achieved nor what steps to take next, or were geared to improving presentation or to merely completing work. Examples included: ‘Good’, ‘Well done’, ‘Title?’, ‘Date?’, ‘Space out questions on the page’, ‘Rule off each piece of work’, ‘Use a pencil and a ruler for diagrams’, ‘Please finish’ and ‘Answer all the questions’.

As emphasized in the following extract, it was important to replace such comments by others that informed students about what they had achieved and what they needed to do next:

The important feature of this technique of course is the quality of the comment. A bland, non-helpful comment such as ‘Good work Jaspaul, this is much neater and seems to show that you have tried hard’ will not show any significant change in attainment because it
says nothing about the individual’s learning. There is no target and
the student, although aware that the teacher is happy with them,
could not be blamed for thinking that neatness is everything and
that by keeping all of their work neat from now on, they will attain
high grades. Students are not good at knowing how much they are
learning, often because we as teachers do not tell them in an
appropriate way.

(Derek, Century Island School)

Many of the teachers started each comment with the name of the indi-
vidual student. This appeared to help them to identify the student and explain
their needs at the outset.

James, you have provided clear diagrams and recognized which chem-
icals are elements and which are compounds. Can you give a general
explanation of the difference between elements and compounds?

Susan, you have got the right idea here about trying to explain your
rule. Think: does it apply to all triangles?

Richard, clear method, results table and graph, but what does this tell
you about the relationship?

However, the names gradually disappeared and comments began to seek
action as well as reflection on the piece of work:

Go back to your notes from the 29th September and look up where chlorophyll is and what it does.

You are fine with two –ve numbers but go back to your number line
and work out +ve with –ve.

Well explained so far but add reasons why the Haber process uses
these conditions.

Initial fears about how students might react to not receiving marks turned
out to be unjustified. Students came to realize that the comments helped them
in their future work:

At no time during the first 15 months of comment-only marking did
any of the students ask me why they no longer received grades. It was
as if they were not bothered by this omission. I found this amazing,
particularly considering just how much emphasis students place on
the grades and how little heed is taken of the comments generally. Only once, when the class was being observed by a member of the King’s College team, did a student actually comment on the lack of grades. When asked by our visitor how she knew how well she was doing in science, the student clearly stated that the comments in her exercise book and those given verbally provide her with the information she needs. She was not prompted to say this!!!!

(Derek, Century Island School)

Also neither parents, senior management teams nor OFSTED inspectors have reacted adversely. Indeed, the provision of comments to students helps parents to focus on and support the students’ learning rather than focus on uninformed efforts to interpret a mark or grade and/or to simply urge their child to work harder. We now believe that the effort that many teachers devote to marking work may be misdirected. A numerical mark does not tell a student how to improve their work, so an opportunity to enhance their learning has been lost.

In general, feedback given as rewards or grades enhances ego rather than task involvement – that is, it leads students to compare themselves with others and focus on their image and status rather than encourages them to think about the work itself and how they can improve it. Feedback by grades focuses students’ attention on their ‘ability’ rather than on the importance of effort, damaging the self-esteem of low attainers. Feedback which focuses on what needs to be done can encourage all to believe that they can improve. Such feedback can enhance learning, both directly through the effort that can ensue and indirectly by supporting the motivation to invest such effort. A culture of success should be promoted where every student can make achievements by building on their previous performance, rather than by being compared with others. Such a culture is promoted by informing students about the strengths and weaknesses demonstrated in their work and by giving feedback about what their next steps should be. These points are discussed in greater depth in Chapter 5.

We have found a variety of ways of accommodating the new emphasis on comments. Some teachers cease to assign marks at all, some enter marks in record books but do not write them in the students’ books, while others give marks only after a student has responded to their comments. A particularly valuable method is to devote some lesson time to redrafting one or two pieces of work, so that emphasis can be put on feedback for improvement within a supportive environment. This can change students’ expectations about the purposes of classwork and homework.

Feedback by comments takes more time than giving marks, and the teachers found ways of creating adequate time gaps to formulate effective comments which could give students ideas and confidence for improving their
work. Once again, the way forward was based on discussions by the group of teachers as a whole and then practices were modified within each teacher’s classroom. One teacher dealt with the challenge as follows:

The whole faculty moved to a comment-only assessment policy in September in the light of the KMOFAP work. I am not aware of a single parent expressing concern over a lack of grades/levels/marks. I am marking less frequently, and often not particularly well, but I mark well once every 3 weeks at present. In theory I would like to do this more, but until we halve class sizes or contact time, or give up having a life, I don’t see this as likely. My aim is to feel less guilty about marking less rather than to try to mark more!

(James, Two Bishops School)

Like James, several teachers spent more time on certain pieces of work to ensure that they could provide good feedback and, to make time for this, did not mark some pieces, marked only a third of their students’ books each week or involved the students in checking straightforward tasks. New procedures were also needed to ensure that both teachers and students were aware of how problems were being tackled and what the students’ targets were in future pieces of work. One example was:

After the first INSET I was keen to try out a different way of marking books to give pupils a more constructive feedback. I was keen to try and have a more easy method of monitoring pupils’ response to my comments without having to trawl through their books each time to find out if they’d addressed my comments. I implemented a comment sheet at the back of my year 8 class’s books. It was A4 in size and the left-hand side is for my comments and the right-hand side is for the pupils to demonstrate by a reference to the page in their books where I can find the evidence to say whether they have done the work [. . .] The comments have become more meaningful as the time has gone on and the books still only take me one hour to mark.

(Sian, Cornbury Estate School)

One reason why comment-only marking took time to develop in the early stages of the project was that the teachers had to develop and hone better ways of writing comments. Being aware of Kluger and DeNisi’s (1996) research review, which showed that feedback only leads to learning gains when it included guidance about how to improve (see Chapter 2), the teachers knew that they had to be thoughtful and careful about how they wrote their comments. So devising the wording for comment-only marking took time and effort for each teacher. The result was that teachers focused in their comments
on trying to encourage and direct their students to improve their work, with the emphasis on mastery of learning rather than on the grading of performance.

As they tried to create useful feedback comments, many of the project teachers realized that they needed to reassess the work that they had asked students to undertake. They found that some tasks were useful in revealing students’ understandings and misunderstandings, but that others focused mainly on conveying information. So some activities were eliminated, others modified and new and better tasks actively sought. Time was also taken by the teachers in reflecting on schemes of work for specific topics and recognizing those activities in which there was opportunity to create a range of good comments. These activities tended to be quite challenging and, in some topics, the teachers realized that such activities had been either sparse or absent. This meant that teachers had to find some alternative activities and these took time to plan and prepare. A further factor that took time was finding appropriate follow-on activities in which students could make another attempt at demonstrating the improvements that the teacher had suggested in their feedback comments. While in some cases this was unnecessary because students redrafted and improved the original piece of work, there were occasions when teachers spent time and effort seeking or creating new activities to help students to take action for improvement.

Gradually, both teachers and learners became more familiar and more skilful in dealing with comment-only marking and, as they did so, the classroom culture began to change. They all came to understand that it was worthwhile putting in the effort to work with feedback by comments because they could sense that learning was improving. The comments provided the vehicle for personal dialogue with each learner about his or her work to which the learner could respond. However, the development was more important than that because the teachers came to realize that they needed to create learning environments that supported and fostered good learning behaviours in their students and again they looked to research for ideas and direction.

Although our teachers had to piece together the various features of their classroom environment, a 1990 study of learning major scales in music by 12-year-olds (Boulet et al. 1990) provoked ideas, discussion and reflection. In this research, one experimental group of students were given written praise, a list of weaknesses and a work-plan, while a second experimental group were given oral feedback, with guidance about the nature of their errors and a chance to correct them. A third group acted as a control and were given no feedback. The results showed that the second experimental group did better at learning their scales. Although the conclusions from this study are ambiguous because two variables were changed together between the two experiments, it does provide some evidence of what an effective learning environment ought to include, and it has been found to provide a fruitful basis for discussion. When
teachers come to discuss the outcome, they begin to surmise what the two experimental classrooms might be like, using their own experiences as teachers and learners to imagine the contrast between the learning situations that the two experimental groups set up. While some teachers might focus on one specific variable having a causal effect, others might use the variables to explain the complexities and nuances of a classroom environment in which the purpose is to improve learning. Thus the issues behind these ideas are brought to the fore and teachers seek both the means and the reassurance to foster good learning environments.

Overall, the main ideas for improvement of learning through students’ written work were:

- Written tasks, alongside oral questioning, should encourage students to develop and show understanding of the key features of what they have learnt.
- Comments should identify what has been done well and what still needs improvement, and give guidance on how to make that improvement.
- Opportunities for students to follow up comments should be planned as part of the overall learning process.

**Peer- and self-assessment**

As explained in Chapter 2, the starting point here was the work of Sadler (1989). It is very difficult for students to achieve a learning goal unless they understand that goal and can assess what they need to do to reach it. So self-assessment is essential to learning. Many who have tried to develop self-assessment skills have found that the first and most difficult task is to get students to think of their work in terms of a set of goals. Insofar as they do, students begin to develop an overview of that work so that it becomes possible for them to manage and control it for themselves. One teacher identified the key features as follows:

> I have thought carefully about pupils taking *ownership* of their own learning. I have now thought more about letting pupils know what the intention of the lesson is and what they need to do to *achieve it*. This way they have to think what they know and take more *responsibility* for their own learning.

(Angela, Cornbury Estate School; teacher’s emphasis)

At the start of the project, initial attempts at self-assessment and target-setting by students were unsuccessful. The teachers saw that the source of the
problem was that their students lacked the necessary skills both to judge specific problems in understanding and to set realistic targets to remedy problems within reasonable time frames. However, those teachers who introduced feedback by comments, and thereby created the classroom environments where students worked together on understanding teacher comments about their work, were providing the training that students needed to judge their own learning and to begin to take action to improve.

In practice, peer-assessment turns out to be an important complement and may even be a prior requirement for self-assessment. Peer-assessment is uniquely valuable for several reasons. One is that prospect of such assessment has been found to improve the motivation of students to work more carefully:

As well as assessing and marking (through discussion and clear guidance) their own work, they also assess and mark the work of others. This they do in a very mature and sensible way and this has proved to be a very worthwhile experiment. The students know that homework will be checked by themselves or another girl in the class at the start of the next lesson. This has led to a well-established routine and only on extremely rare occasions have students failed to complete the work set. They take pride in clear and well-presented work that one of their peers may be asked to mark. Any disagreement about the answer is thoroughly and openly discussed until agreement is reached.

(Alice, Waterford School)

A second reason is that the interchange in peer discussions is in language that students themselves would naturally use. Their communication with one another can use shared language forms and can provide tenable models, so that the achievements of some can convey the meaning and value of the exercise to others still struggling. An additional factor is that students often accept, from one another, criticisms of their work that they would not take seriously if made by their teacher.

A third advantage is that feedback from a group to a teacher can command more attention than that of an individual and so peer-assessment helps strengthen the student voice and improves communication between students and their teacher about their learning. This can also make the teacher’s task more manageable, for it helps the learners to recognize their own learning needs and to inform the teacher about these needs. A further advantage is that when students are busy, involved in peer assessment in the classroom, the teacher can be free to observe and reflect on what is happening and to frame helpful interventions:

We regularly do peer marking – I find this very helpful indeed. A lot of misconceptions come to the fore and we then discuss these as we are
going over the homework. I then go over the peer marking and talk to students individually as I go round the room.

(Rose, Brownfields School)

In general, students’ learning can be enriched by marking their own or one another’s work, whether this be classwork, homework, test scripts or presentations to the class. Students learn by taking the roles of teachers and examiners of others.

One simple and effective idea is for students to use ‘traffic light’ icons, labelling their work green, amber or red according to whether they think they have good, partial or little understanding. These labels serve as a simple means of communication of students’ confidence in their work and so act as a form of self-assessment. Students may then be asked to justify their judgements in a peer-group, so linking peer- and self-assessment. This linkage can help in the development of the skills and the detachment needed for effective self-assessment. So it appears that peer-assessment is an important factor in helping students develop the essential skills that they require for self-assessment.

Teachers developed a variety of classroom strategies to explore these habits and skills. The following teacher used them as part of work on ‘investigations’ in mathematics:

Using formative assessment to aid investigational work has been very successful and I intend to use it with year 10 and 11 in the future for their course work. I gave my year 9 group an easy investigation on area and they went away and did this. On the lesson it was due in, I got them to mark their peers’ investigational work straight from the actual NC [national curriculum] levels. I was really surprised with the attention they paid to the work and to the levels. They also gave excellent reasons for giving that person’s work the level they did. The work was swapped back and the pupil then had to produce targets for their own work. There was a class discussion at the end of the lesson on their targets and they then had to go away and rewrite the investigational work. This process was repeated one more time, bar the rewrite. The results were excellent and most had improved by two grades. I found when marking the work that some had not quite got the gist of it, but that will come with repetition of the task in the future.

(Lily, Brownfields School)

Another approach is to ask students first to ‘traffic-light’ a piece of work and then to indicate by a show of hands whether they put green, amber or red; the teacher can then pair up the greens and ambers to deal with problems between them, while the red students can be helped as a group to deal with
their deeper problems. This is instant differentiation but the recognition of the learning needs has been done by the students, allowing the teacher to focus on steering the remedial action. Because the response to their needs is immediate, students begin to realize that revealing their problems is worthwhile, as the focus of the teaching is to improve learning rather than to compare one student with another.

Peer- and self-assessment helped the project teachers to make the criteria for evaluating any learning achievements transparent to students, so enabling them to develop a clear overview both of the aims of their work and of what it meant to complete it successfully. Such criteria were sometimes abstract and so concrete examples were used in modelling exercises to develop understanding. Suitable models were often drawn from other students’ work, either from previous years or from the class itself, although these pieces were sometimes modified by the teacher to emphasize particular aspects or the lack of evidence for a specific criterion.

However, peer- and self-assessment will only thrive if teachers help their students, particularly the low-attainers, to develop the skill. As one teacher found, this can take time and practice:

> The kids are not skilled in what I am trying to get them to do. I think the process is more effective long term. If you invest time in it, it will pay off big dividends, this process of getting the students to be more independent in the way that they learn and taking the responsibility themselves.

(Tom, Riverside School)

For such peer-group work to succeed, many students will need guidance about how to behave in groups – for example, in listening to one another and taking turns – and once again this takes time and care if it is to succeed in the classroom. Students should be taught the habits and skills of collaboration in peer-assessment, both because these are of intrinsic value and because peer-assessment can help develop the objectivity required for effective self-assessment.

Our experience of work on this theme leads to the following recommendations for improving classroom practice:

- The criteria for evaluating any learning achievements must be made transparent to students to enable them to have a clear overview both of the aims of their work and of what it means to complete it successfully. Such criteria may well be abstract – concrete examples should be used in modelling exercises to develop understanding.
- Students should be taught the habits and skills of collaboration in peer-assessment, both because these are of intrinsic value and because
peer-assessment can help develop the objectivity required for effective self-assessment.

- Students should be encouraged to bear in mind the aims of their work and to assess their own progress to meet these aims as they proceed. They will then be able to guide their own work and so become independent learners.

The main point here is that peer- and self-assessment make unique contributions to the development of students’ learning – they secure aims that cannot be achieved in any other way.

**The formative use of summative tests**

At the start of the project, we tried to encourage teachers to steer clear of summative assessment as they developed their formative work, because of the negative influences of summative pressures on formative practice. The teachers could not accept such advice because their reality was that formative assessment had to work alongside summative assessment. They tried instead to work out effective strategies for using formative approaches to summative tests. These involved both using formative strategies to aid preparation for summative tests, and using them as a means of identifying learning targets from the detailed evidence that summative test questions could produce.

In a first innovation, the teachers used formative practices to support revision and develop more effective reviewing strategies, for example in tackling the following problem:

When I asked them what preparation they did before the test they would often say, ‘Revise, Sir’. They did not mention any of the reviewing strategies we had discussed in class. When questioned more closely, it was clear that many spent their time using very passive revision techniques. They would read over their work doing very little in the way of active revision or reviewing of their work. They were not transferring the active learning strategies we were using in class to work they did at home.

(Tom, Riverside School)

The overall finding was that to change this situation, students should be engaged in a reflective review of the work they have done to enable them to plan their revision effectively. One way is for students to ‘traffic-light’ a list of key words, or a number of questions from a test paper of the topics on which the test will be set. The point of this is to stimulate the students to reflect on
where they feel their learning is secure, which they mark green, and where they need to concentrate their efforts, which they mark amber or red. These traffic lights then form the basis of a revision plan. Students can be asked to identify questions on past examination papers that test their red areas and then work with books and in peer groups to ensure they can answer those questions successfully. This helps students structure their revision so that they work on their areas of weakness rather than simply reviewing what they already know. One teacher described a way of using peer group work that could help with revision:

One technique has been to put the students into small groups and give each student a small part of the unit to explain to their colleagues. They are given a few minutes preparation time, a few hints and use of their exercise books. Then each student explains their chosen subject to the rest of their group. Students are quick to point out such things as, ‘I thought that the examples you chose were very good as they were not ones in our books. I don’t think I would have thought of those’. Or, ‘I expected you to mention particles more when you were explaining the difference between liquids and gases’. These sessions have proven invaluable, not only to me, in being able to discover the level of understanding of some students, but to the students too.

(Philip, Century Island School)

A second innovation was suggested by research studies (King 1992; Foos et al. 1994) that have shown that students trained to prepare for examinations by generating and then answering their own questions outperform comparable groups who prepared in conventional ways. When students are encouraged to set questions and mark answers, this can help them both to understand the assessment process and to focus further efforts for improvement. Preparation of test questions calls for, and so develops, an overview of the topic:

More significantly, pupils’ setting of their own questions has proved to be a stimulating and productive means of rounding off topics and revising their work. Answering other people’s questions and discussing solutions with the whole class is a very effective way of concentrating on topics that need to be revised rather than spending time on what is already known. Students have had to think about what makes a good question for a test and in doing so need to have a clear understanding of the subject material. As a development of this, the best questions have been used for class tests. In this way, the students can see that their work is valued and I can make an assessment of the progress made in these areas. When going over the test, good use can
be made of group work and discussions between students concentrating on specific areas of concern.

(Angela, Cornbury Estate School)

A third innovation was to use the aftermath of tests as an opportunity for formative work. Teachers might, for example, look to see which questions were poorly done by most students and concentrate on rectifying the learning associated with those, rather than simply working through a mark scheme where the focus is on claiming a few extra marks rather than on focusing on learning. Peer marking of test papers can also be helpful, as with normal written work, and is particularly useful if students are required first to formulate a mark scheme, an exercise which focuses attention on criteria of quality relevant to their productions, as this teacher describes:

Now, the papers are returned, and students work in small groups to agree on answers – in effect coming up with their own mark scheme. This works best in practice, I have found, if only a few questions are tackled at a time, then the class share information, and make sure that they are in agreement with the official mark scheme, then on to the next few questions. Initially, this tended towards, ‘I must be wrong because I’m the only one who has that answer’. And that is still a problem with lower ability students, who lack confidence. Quickly, however, the middle ability and more able pupil is able to realize that the best answer is not necessarily the majority one, but the one that can be best justified.

(Philip, Century Island School; teacher’s emphasis)

As with the test review, after peer marking, teachers can reserve their time for discussion of the questions that give particular difficulty; those problems encountered by only a minority can be tackled by peer tutoring.

As with all forms of their written work, students can be encouraged through peer- and self-assessment to apply criteria to help them understand how their test answers might be improved. This may include providing them with opportunities to discuss and clarify how criteria play out in a piece of work, to recognize which areas need to be improved to create a quality piece of work, and then to be given the opportunity to re-work examination answers in class.

These developments challenge the view frequently expressed that formative and summative assessments are so different in their purpose that they have to be kept apart, views which are supported by experience of the harmful influence that narrow ‘high-stakes’ summative tests can have on teaching. However, it is unrealistic to expect teachers and students to practise such separation, so the challenge is to achieve a more positive relationship between the
two. This section has set out ways in which this can be done: they can all be used for tests where teachers have control over the setting and the marking, but their application may be more limited for tests where the teacher has little or no control.

We must add a caveat to this message about summative tests and their formative use. The project schools felt constrained to make frequent use of questions from key stage 3 and GCSE examinations to familiarize their students with these. This, at times, limited the formative dimension, as the focus moved from developing understanding to ‘teaching to the test’. More generally, the pressures exerted by current external testing and assessment requirements are not fully consistent with good formative practices. Although most of our teachers were able to remove the conflict between formative and summative assessment for some parts of their schemes of work, frequent summative testing dulled the message about the means to improve, replacing it with information about successes or failures. While our work with schools showed evidence of a lack of synergy across this internal/external interface, the study of this problem lay outside the scope of this project.

Overall, the main possibilities for improving classroom practice are as follows:

- Students should be engaged in a reflective review of the work they have done to enable them to plan their revision effectively.
- Students should be encouraged to set questions and mark answers to help them, both to understand the assessment process and to focus further efforts for improvement.
- Students should be encouraged through peer- and self-assessment to apply criteria to help them understand how their work might be improved. This may include providing opportunities for them to re-work examination answers in class.

The overall message is that summative tests should be, and should be seen to be, a positive part of the learning process. Such tests should be used to chart learning occasionally rather than to dominate the assessment picture for both teachers and students. Active involvement of students in the test process can help them to see that they can be beneficiaries rather than victims of testing, because tests can help them improve their learning:

After each end-of-term test, the class is grouped now to learn from each other. Clare Lee has interviewed them on this experience and they are very positive about the effects. Some of their comments show that they are starting to value the learning process more highly and they appreciate the fact that misunderstandings are given time to be resolved, either in groups or by me. They feel that the pressure to
succeed in tests is being replaced by the need to understand the work that has been covered and the test is just an assessment along the way of what needs more work and what seems to be fine.

(Belinda, Cornbury Estate School)

**Implications**

The new practices described in this chapter are far more rich and more extensive than those we were able to suggest at the outset of the project on the basis of the research literature. All of them involve teachers in reflecting on their current practice and involve changes in the way that they work with their students and with the curriculum. This vividly demonstrates that, with support, teachers can transform research results into new and effective practices.

We do not wish to imply that the set of four activities is a closed and complete set – that is, there may be other activities that could, if developed with formative principles in mind, further enrich formative work. For example, we did not explore concept maps, but only because in our original survey we did not find any research on their formative use. Two of the project teachers tried to use them to explore student’s understanding but found they took too much time and yielded information that was not detailed enough to capture important problems. This indicates that further development work is needed, taking up, for example, the implication from research (Ruiz-Primo *et al.* 2001) that students’ labelling and explanation of the links between the concept nodes might yield the most useful information. Similarly, other teachers were keen to explore target-setting in a formative context, but found in the current school practice that the targets were on too coarse a scale and could not be understood by many students. When they were made more detailed and fine-grained, then the task of ensuring that the learner understood required the use of peer- and self-assessment approaches and the exercise merged into the work in our four main activities. Our general conclusion is that any additional activity will probably need careful study and development if it is to add power to the four described in this chapter.

Our work with the KMOFAP teachers has raised more fundamental issues about teaching, learning and assessment, which we discuss in Chapter 5. The personal processes of change for teachers are then considered in more detail in Chapter 6. That this is not a simple process is obvious and the trajectory for individual teachers, departments and schools will differ because starting points will vary, as will the beliefs, wishes and efforts of those embarking on such changes. For such practice to be developed and then sustained requires that teachers be supported at a variety of levels: we look at this in Chapter 7.