the work that they had asked students to undertake. They found that some tasks were useful in revealing students' understandings and misunderstandings, while others focused mainly on conveying information. So some activities were eliminated, others modified, and new and better tasks actively sought.

Overall the main ideas for improvement of feedback can be summarized as follows:

• Written tasks, alongside oral questioning, should encourage students to develop and show understanding of the key features of what they have learned.

• 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 respond to comments should be planned as part of the overall learning process.

The central point here is that, to be effective, feedback should cause thinking to take place. The implementation of such reforms can change both teachers' and students' attitudes toward written work: the assessment of students' work will be seen less as a competitive and summative judgment and more as a distinctive step in the process of learning.

PEER ASSESSMENT AND SELF-ASSESSMENT

Students can achieve a learning goal only if they understand that goal and can assess what they need to do to reach it. So self-assessment is essential to learning.[6] Many teachers who have tried to develop their students' 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 so, they begin to develop an overview of that work that allows them to manage and control it for themselves. In other words, students are developing the capacity to work at a metacognitive level.

In practice, peer assessment turns out to be an important complement to self-assessment. Peer assessment is uniquely valuable because students may accept criticisms of their work from one another that they would not take seriously if the remarks were offered by a teacher. Peer work is also valuable because the interchange will be in language that students themselves naturally use and because students learn by taking the roles of teachers and examiners of others.[7] One teacher shared her positive views of peer assessment:

> 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

The last sentence of this teacher's comments brings out an important point: when students do not understand an explanation, they are likely to interrupt a fellow student when they would not interrupt a teacher. In addition to this advantage, peer assessment is also valuable in placing the work in the hands of the students. 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 pupils individually as I go round the room. — *Rose*, Brownfields School

However, self-assessment will happen only if teachers help their students, particularly the low achievers, to develop the skill. 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 to take the responsibility themselves. — *Tom*, Riverside School

One simple and effective idea is for students to use "traffic light" icons, labeling their work green, yellow, or red according to whether they think they have good, partial, or little understanding. These labels serve as a simple means of communicating students' self-assessments. Students may then be asked to justify their judgments in a peer group, thus linking peer assessment and self-assessment. This linkage can help them develop the skills and the detachment needed for effective self-assessment.

Another approach is to ask students first to use their "traffic light" icons on a piece of work and then to indicate by hands-up whether they put a green, yellow, or red icon on it. The teacher can then pair up the greens and the yellows to help one another deal with their problems, while the red students meet with the teacher as a group to deal with their deeper problems. For such peer-group work to

succeed, many students will need guidance about how to behave in groups, including such skills as listening to one another and taking turns.

In some subjects, taking time to help students understand scoring rubrics is also very helpful. Students can be given simplified versions of the rubrics teachers use, or they can be encouraged to rewrite them or even to create their own. Again, peer assessment and self-assessment are intimately linked. Observers in several language arts classrooms saw children apply to their own work lessons they had learned in peer assessment. A frequently heard comment was "I didn't do that either" or "I need to do that too."

Students' reflection about their understanding can also be used to inform future teaching, and their feedback can indicate in which areas a teacher needs to spend more time. A useful guide is to ask students to "traffic light" an end-of-unit test at the beginning of the unit: the yellow and red items can be used to adjust priorities within the teaching plan. Our experience leads us to offer 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, but concrete examples should be used in modeling 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 keep in mind the aims of their work and to assess their own progress toward meeting these aims as they proceed. Then they will be able to guide their own work and so become independent learners.

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

THE FORMATIVE USE OF SUMMATIVE TESTS

The practices of self-assessment and peer assessment can be applied to help students prepare for tests, as in tackling the following problem:

> [The students] 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 [reviewing] tech-

niques. 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

To remedy this situation, students can be asked to "traffic light" a list of key words or the topics on which the test will be set. The point of this exercise 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, in yellow and red. These traffic lights then form the basis of a review plan. Students can be asked to identify questions on past tests that probe their "red" areas. Then they can work with textbooks and in peer groups to ensure that they can successfully answer those questions.

The aftermath of tests can also be an occasion for formative work. Peer marking of test papers can be helpful, as with normal written work, and it is particularly useful if students are required first to formulate a scoring rubric — an exercise that focuses attention on the criteria of quality relevant to their productions. After peer marking, teachers can reserve their time for discussion of the questions that give widespread difficulty, while peer tutoring can tackle those problems encountered by only a minority of students.

One other finding that has emerged from research studies is that students trained to prepare for examinations by generating and then answering their own questions outperformed comparable groups who prepared in conventional ways.[8] Preparing test questions helps students develop an overview of the topic:

> Pupils 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 pupils 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

Developments such as these challenge common expectations. Some have argued that formative and summative assessments are so different in their purpose that they have to be kept apart, and such arguments are strengthened when one experiences the harmful influence that narrow, high-stakes summative tests can have on teaching. However, it is unrealistic to expect teachers and students to practice such separation, so the challenge is to achieve a more positive relationship between the two. All of the ways we have de-