

Internal Moderation

Each assessment scheme which contributes to a nationally recognised standard involves some kind of moderation process. Moderation is to ensure that standards are being applied consistently. The first level of moderation is within a department. Through practice you will learn whether you are strict or lenient compared with others and to adjust your assessment accordingly. The following exercise enables you to practice departmental moderation, which should become a quicker process with time.

Exercise

For the whole department, working in pairs.

You will need about 20 pieces of work from different students on the same investigation. It is a good idea to collect a few from each member of the department as this is more likely to produce variety in the students' approaches to the investigation. Each pair of teachers should have a complete set.

In pairs, use the SMILE marking scheme to assess the students' work. Do not write on the students' work.

Compare your results with those of the other teachers. Where there are differences in the marks allocated to a piece of work, discuss until a consensus is reached.

Comparing GCSE Assessment Schemes

As can be seen from the examples, GCSE marking schemes for coursework tasks vary considerably. One factor to take into account when you are choosing which GCSE to use is how compatible the marking scheme is with the way you like to work.

The following exercise gives you the opportunity to use two GCSE assessment schemes.

Exercise

For the whole department, working in pairs or individually

You will need about 20 pieces of work from different students working on the same investigation. It is a good idea to collect a few from each member of the department as this is more likely to produce variety in the students' approaches to the investigation.

Each pair of teachers should have a complete set.

Do not write on the students' work.

In pairs, or individually, allocate a grade to each piece of work using the following GCSE marking schemes:

1. MEG SMP (11–16). Use the sheet for investigational work.
2. LEAG A Syllabus

See *Chapter 8* for details of these schemes.

Make a list of those pieces of work which are graded differently on the two schemes.

Discuss your results with the rest of the group.

Work which does not Fit the Scheme

Whatever assessment scheme you choose, it is likely that some students will produce work which does not fit.

Students may work in an idiosyncratic way which bypasses the categories listed in the assessment scheme. They may achieve within the categories but not do any of the things in those categories which are listed for the award of marks.

Sometimes this is because the assessment scheme was not really designed for the particular type of task being set.

e.g. Imagine a scheme designed for the standard investigation. Marks could be awarded for the generation of results, observation of patterns, generalisations and justifications. You would hardly expect such a scheme to work if you used it to assess the students' work on an applied practical problem like *Washington Underground* (p.114). Students might well score zero if this were attempted.

It is difficult to devise an assessment scheme which is suitable for a wide variety of tasks. Most designers of assessment schemes have a particular type of task in mind. You may decide to use different assessment schemes for different types of tasks. You may decide to restrict the type of task you set so that the students' resulting achievement is more likely to fit the assessment scheme.

In general, examination group assessment schemes do not cope well with tasks involving design or construction as their main theme.

It is beneficial for students to devise their own mathematical tasks and to choose their own avenues to follow within a task. However it is this process which could put the students work outside the assessment schemes. Encourage what is useful educationally rather than what will make assessment easier.

But if a student's work appears not to fit, you are advised not to follow the assessment scheme blindly as this is likely to result in the student's work being undervalued. Instead, resort to grading or marking the work using your own judgement of its worth.

Providing justifications for the assessment you arrive at will be useful to yourself and the student and possibly to other teachers who may encounter a similar outcome for that task.

In the case of SATs or tasks which are to be submitted for GCSE coursework, the students must be made aware of the assessment criteria before they embark on the task.

Choosing Tasks for Assessment Purposes

Tasks for formal assessment must allow students to demonstrate what they can do. They must also enable the assessor to discriminate between students, i.e. to allocate different grades or marks. A very 'easy' investigation set as a task would allow *all* the students to reach a generalisation. At the other extreme, if a problem-solving activity which is too challenging is used, all the students will flounder at the planning stage, and the task cannot be used for assessment.

We need to provide tasks which will produce a variety of outcomes from the students.

If you are unsure about the task you are planning to use, pilot it with a group of students who will not be assessed before you use it for formal assessment.

The context in which a problem is set must also be taken into account. A context may be more appealing to some students than to others and, therefore, the performance of those students could be enhanced in relation to the performances of others. If students do not relate to the context of a task, or find it off-putting, this will depress their performances. For this reason we need to provide a variety of tasks, so that students have the opportunity to demonstrate the best of their mathematics.

Look at all the tasks you intend to use for assessment:

Task Checklist	✓
Do they provide a balance of different types of activity?	
Do they cover a broad range of mathematics?	
Do they avoid any bias towards 'stereotypical boys' contexts?	
Do they provide a balance between short tasks and long tasks?	
Do they provide students with the opportunity to talk about their mathematics?	
Do they provide a balance between individual and collaborative work?	
Do they provide sufficient practical and written work?	

Devising your own Assessment Scheme

In the following situations, you could assess open tasks using a scheme which you have devised yourself:

- For TA for the National Curriculum
- For tasks preparing students for SATs
- For tasks preparing students for GCSE Coursework

The process of devising an assessment scheme commits teachers to a careful examination of different aspects of their students' mathematics, e.g. their ability, methods, etc.

This, in itself, has been found to be a valuable way of developing insight into students' learning and into the issues of assessment. You may, therefore, decide to devise your own scheme for reasons of professional development.

A suitable assessment scheme will take time to produce. It will evolve in the light of discussion, trial and evaluation carried out within the mathematics department. You may want to enlist outside help e.g. from an advisory teacher.

There could be experience to draw on in other subjects or approaches within the school, BTEC and TVEI for example. English teachers are used to marking open tasks such as essays or other creative writing. On a day when the whole school is doing in-service training, a session could be devoted to sharing experience of assessment.

A starting point for devising a scheme for the mathematics department could be to assess some examples of students' work without using any predetermined criteria.

During the discussion of what grades to award to particular pieces of work, many suggestions will be made for assessment criteria and these will give you some idea of how individual teachers compare in their intuitive choices of criteria.

Exercise 1

Collect together about 20 pieces of student work on the same task.

Reproduce a set for each pair of teachers.

In pairs, rank-order the students' work.

Discuss your results with the rest of the group.

Where there are differences in the rank-ordering, arrive at a consensus through discussion.

Devising Your Own Assessment Scheme *continued*

* Exercise 2

Individually, set several groups of students the same task to do.

Assess the work in your own way, using your own judgement, recording your reasons where possible.

Swap sets of work with someone else in the department and assess their scripts.

At the departmental meeting, discuss with colleagues the results of your marking.

These two exercises should provide the department with plenty of ideas for assessment criteria. Make a note of them for future reference.

From your experiences so far, you should be able to make general decisions about the sort of assessment scheme that would suit your department. Spend one departmental meeting discussing the following general issues before you proceed to detailed development of an assessment scheme.

- Do you want to devise an assessment scheme specific to each task in the way that GAIM does?
- Do you want different marking schemes for different types of activity, e.g. investigation, applied problem, survey?
- Do you want one marking scheme to cover all open work?
- Do you want the result of the assessment to be a mark out of 10, a percentage, a National Curriculum level, or a GCSE grade?
- Do you want the assessment to include the achievement of specific items of mathematics, e.g. levels of attainment in ATs?
- Do you simply want a general list of process headings to guide teachers' judgement?
- Do you want specific categories in which marks can be awarded, and guidance as to how to award marks within those categories?

When you have decided on the basic kind of assessment you want, you can use the results of the previous assessment exercises as a starting point. Discuss and agree a *draft* assessment scheme in a departmental meeting.

Trial the assessment scheme. To do this everyone in the department should do the same activity with a group of students and then use the assessment scheme. Moderate the results in a departmental meeting. This will highlight any weaknesses in the scheme. These can then be improved upon.

Repeat this process until you have an assessment scheme that you are all happy with.

Departmental Assessment Policy

Because of the complexities of National Curriculum levels and GCSE grades it is necessary to have a policy on assessment which will carry you through to 1994 and beyond. At the time of writing it looks as if reporting for year 11 will be in terms of National Curriculum levels rather than GCSE grades and that some kind of equivalence between the two will be determined. The current proposal is that level 4 should be equivalent to grade G and that level 10 represents a standard above grade A. It is not yet clear how the grades and levels in between will match up.

Your departmental policy should detail how mathematics assessment is to be carried out and how it is to be recorded and reported. This could include:

- routine testing which is part of the learning scheme used;
- assessment scheme(s) for open tasks;
- recording of achievement in terms of the National Curriculum;
- which GCSE syllabus is being used.

The first thing to do is to make a list of all the assessment that is going on at the moment. This is best done in terms of year groups and, where appropriate, sets of students. Identify aspects which you are happy with, which are useful and which you wish to continue. Identify aspects which you wish to phase out.

Think about what new assessments you might introduce.

In formulating your final assessment policy, you should also bear in mind:

The needs of different year groups

- Where is each year group in terms of the timetable for implementation of the National Curriculum?
- What assessment is appropriate for students of this age?

Which GCSE syllabus to use

- Which GCSE best matches what we are doing at the moment?
- Which GCSE best matches what we hope to be doing in the long term?

National Curriculum

- How do we prepare our students for SATs?
- Is our current assessment of, and record keeping system for, TA adequate?

Your department

- Do teachers feel positive about proposed changes to assessment?
- What is the appropriate pace of change for this department?