

Grades and feedback

- **Assigning grades**
- **Grade descriptors**
- **Giving feedback on assessed work**



Assigning grades

Definition

A grade is a single indicator of the standard of a student's work in a course.

At UQ, courses are graded on a scale of 1 (extremely poor) to 7 (the highest grade). A grade of 4 is the normal passing grade, while a grade of 3 may be acceptable for some purposes. Some programs are graded Pass/Fail, but this is negotiated when the course is created. It can not be done arbitrarily.

Allocating grades

At UQ the grade a student receives for their work in a course should be related to the quality of their work in the course, not to the quality of the work of other students. The grade a student receives should also be related to the extent to which that student has achieved the learning goals for the course.

The grade will be based on the student's achievements on the various assessment tasks set in the course. Normally you will let students know in the course profile how their grades will be derived. If you view it as an abstract and separate task then designing a grading scheme will seem forbiddingly difficult. However, if the assessment tasks are carefully designed to assess the learning goals of the course and the marking schemes for the tasks reflect this, then the assigning of grades will not be very difficult.

Examples of grading schemes

Example 1 - three assessment tasks of equal importance

There are three assessment tasks: an essay, a project and a final examination. They are of equal importance in determining a student's grade. Each task assesses all or almost all of the learning goals.

Students' attempts at each of the three assessment items are awarded an overall standard of Poor, Marginal, Adequate or Good.

Grades are decided by applying the following rules in order:

- Students getting an overall standard of Poor on two or three of the assessment tasks will get a grade of 2 or less ('Poor, Poor, Poor' and 'Poor, Poor, Marginal' get 1; 'Poor, Poor, Adequate' and 'Poor, Poor, Good' get 2).
- Students getting an overall standard of Poor on any of the assessment tasks will get a grade of 4 or less ('Poor, Marginal, Marginal', 'Poor, Marginal, Adequate', 'Poor, Adequate, Adequate' and 'Poor, Marginal, Good' get 3; 'Poor, Adequate, Good' and 'Poor, Good, Good' get 4).
- Students getting an overall standard of Marginal on two or three of the

assessment tasks will get a grade of 5 or less ('Marginal, Marginal, Marginal', 'Marginal, Marginal, Adequate' get 4; 'Marginal, Marginal, Good' get 5).

- Students getting an overall standard of Marginal on any of the assessment tasks will get a grade of 6 or less ('Marginal, Adequate, Adequate', 'Marginal, Adequate, Good' get 5, 'Marginal, Good, Good' gets 6).
- 'Adequate, Adequate, Adequate' gets 5; 'Adequate, Adequate, Good' gets 6; 'Adequate, Good, Good' and 'Good, Good, Good' get 7.

Note

Failure to submit an attempt at an assessment task would not yield an overall standard of Poor for that task. It is possible to require as a separate rule that students must, as a course requirement, attempt all assessment tasks; otherwise they will fail.

Under this scheme it is possible for students to fail (grade of 2 or worse) before they do the final examination (standard of Poor on both the essay and the project) - such a scheme should be used only after you have made sure you are prepared to accept the possible consequences.

Example 2 - three assessment tasks, two of them required but not otherwise considered

There are three assessment tasks: a series of practical experiments, a project and a final examination. Students are required to complete the practical experiments (possibly by doing 80% of them to the satisfaction of a demonstrator) and the project (perhaps in the opinion of a peer) to a satisfactory standard. Having done this their grade is determined by their performance on the final examination. This examination is marked on a 2 to 7 scale; thus students are never disadvantaged by sitting the examination.

The table below shows one possible grading scheme using these rules:

| Practical work | Project | Final examination | Final grade |
|----------------|----------------|-------------------|-------------|
| Unsatisfactory | Unsatisfactory | Not marked | 1 |
| Unsatisfactory | Satisfactory | Not marked | 2 |
| Satisfactory | Unsatisfactory | Not marked | 2 |
| Satisfactory | Satisfactory | 2 - 7 | 2 - 7 |

The practical work and the project may be thought of as gatekeeper tasks: students must get through these gates before their performance in the examination is considered. The course learning goals would need to reflect this. They might include, for example:

- The student will be able to carry out clearly described experiments to a satisfactory standard.
- The student will be able to carry out a simple practical project with clearly specified outcomes to a satisfactory standard.

Grading on the basis of total marks

This method is not recommended. However, probably the most commonly used means of assigning grades to students is to assign marks for each assessment task, add up the marks gained by each student, and then give grades according to that total. We do not recommend this method.

Any mark can be reduced to a percentage of the maximum possible mark, so only percentages will be looked at here.

In what sense is the total mark system criterion referenced?

If the ranges of marks for given grades are assigned without reference to the marks actually gained by students then, in a very minimal sense the grades are criterion referenced.

If the grades are decided only after looking at the distribution of students' marks (for example, by looking for 'natural breaks' in the distribution) then the system is not criterion referenced.

If the grades are decided principally on the basis of rank order in the class ('the top 5% get 7', etc) then the system is norm referenced. It is this system which has not been used at UQ since 1998.

In a system where grades are predefined by using total marks, a grading table like the one below will be specified before the start of semester and then used to assign grades to students.

This system unfortunately seems to be very common in universities world wide.

| Mark range % | Grade |
|--------------|-------|
| 0 - 19 | 1 |
| 20 - 39 | 2 |
| 40 - 49 | 3 |
| 50 - 64 | 4 |
| 65 - 74 | 5 |
| 75 - 84 | 6 |
| 85 - 100 | 7 |

Sample grade allocation table >

Weighting of assessment tasks

In this system the contribution of an assessment task to the final total mark (and thus to students' grades) is at most the highest possible mark for that task. The weight an assessment task has in determining students' grades is the maximum marks available for that task as compared to the maximum marks available for others. If the marks for one task are given out of twenty and for another out of forty, then the second task has twice the weight of the first.

What is the problem?

The problem is that the grades are not clearly linked to the extent to which students have achieved the learning goals of the course.

In the sample table above, 50% is the minimum mark for a passing grade (4 is the minimum passing grade at UQ). Depending on the marking schemes for the assessment tasks which yield the marks which make up the total mark, this could mean the student has achieved:

- 50% of the learning goals - but those achieved are achieved completely, and the other 50% not achieved at all.
- all of the learning goals only half achieved - that is, 50% of everything, but 100% of nothing;
- some other combination.

Another problem which may bother some is the seeming accuracy of percentage marks. This accuracy is, in most cases, spurious. Percentage marks give the impression that small differences in marks actually matter. It may be argued, for example, that a student who gets 85% has performed better in the course than a student who gets 84%. In the example in the table above, one student will be awarded a grade of 7 and the other 6. Yet, if a slightly different set of tasks had been set, or if the physical wellbeing of the two students had been different, or, perhaps, if the marker had been a different person or the same person on a different occasion, the positions might have been reversed. Of course there are always problems with borderline cases, regardless of how grades are allocated. However, the use of percentages and the possibly spurious assumption as to their accuracy, may mean that decisions on such cases are made too readily and too mechanically.

When is there no problem?

If the learning goals are simply that the student learn a large number of unrelated facts then, of course, there is no problem. Fifty per cent presumably will mean the student has successfully learned half of those facts (as evidenced, for example, by a mark of 50% on a multiple choice test). However, it seems unlikely that a university course will have such an unsophisticated goal as its sole or even its main learning goal.

Ameliorating the problem

Ultimately the solution to this problem is to change grading systems and to use some other method for assigning grades. In the meantime some measures can be taken to help the situation:

- Make sure that assessment tasks in the course address all, or all of the important learning goals of the course - preferably, the more important the goal the more marks will be allocated to its achievement.
- Make sure that the marking schemes for each assessment task closely link the mark for the task to the learning goals of the course.
- Qualify your total mark grading system with some other rules. For example:

Students must pass both the practical work and the theory paper in order to pass this course

or

All assessment tasks are graded on a 1 to 7 scale which reflects the University's scheme for grading courses; a student's overall grade for this course will not be more than one grade higher than the lowest grade gained on any assessment task...

- Write grade descriptors and then look at the work of some students awarded each grade. Ask yourself whether the work of these students reflects the qualities of the work as set out in the relevant grade descriptors. If not, you may need to reconsider your grading system for the next offering of the course.

If your School or Faculty requires percentages

If your School or Faculty requires percentage marks then of course you will comply. However the percentages may be used to determine the grades, or the grades may be used to determine the percentages. Thus it is reasonable to determine the grades for students by one of the recommended methods and then to assign percentage marks to the grades. In this case all students awarded a given grade will be allocated the same percentage mark.

Grade descriptors

Definition

Grade descriptors are descriptions of the quality of work which will qualify for a given grade. They can be used both to help work out how to combine the results of assessment tasks into grades and to see after the event that the method yielded reasonable results.

Grade descriptors and assessment tasks

Grade descriptors should not be confused with grading schemes. A grade descriptor describes in general terms the kind of performance which might be awarded a particular grade. A grading scheme explains how to go from the evidence available (students' performances on assessment tasks) to grades. A grading scheme must give results consistent with any grade descriptors. However, a particular set of grade descriptors might be consistent with many grading schemes.

Grading scale

UQ's grading scale can be equated with non-numeric labels and descriptive meanings which provide conceptual support for a move toward criterion referencing. Such labels are used in many other universities, and a prototypic set of generic descriptors is given below (open to further development by the Assessment Sub Committee). The use of descriptors would supplement but not replace the numeric grades, which would still be used for functional purposes such as the calculation of grade point averages. The generic descriptors provide a University-wide point of reference for the standards of criteria.

1. Serious fail

Fails to satisfy most or all of the basic requirements of the course.

2. Fail

Fails to satisfy some of basic requirements of the course.

3. Pass conceded

Falls short of satisfying all basic requirements for Pass but can be granted concession for the deficiencies through:

- being close to satisfactory overall, or
- having compensating strengths in some aspects of the course, or
- having compensating strengths in other courses, or
- other mitigating considerations.

4. Pass

Satisfies all of the basic learning requirements for the course, such as knowledge of fundamental concepts and performance of basic skills; demonstrates sufficient quality of performance to be considered satisfactory or adequate or competent or capable in the course.

5. Credit

Demonstrates ability to use and apply fundamental concepts and skills of the course, going beyond mere replication of content knowledge or skill to show understanding of key ideas, awareness of their relevance, some use of analytical skills, and some originality or insight.

6. Distinction

Demonstrates awareness and understanding of deeper and subtler aspects of course, such as ability to identify and debate critical issues or problems, ability to solve non-routine problems, ability to adapt and apply ideas to new situations, and ability to invent and evaluate new ideas.

7. High distinction

Demonstrates imagination, originality or flair, based on proficiency in all the learning objectives for the course; work is interesting or surprising or exciting or challenging or erudite.

Note: Each passing grade subsumes and goes beyond the grades lower than it.

There are some courses in which it is felt that the number of grades to discriminate among students' performances should be fewer than the seven normally used; for example, within certain practical and clinical courses, where it is essential to measure students against one predetermined, absolute standard. It may be that there is an essential level of competence all students must attain, but either it is of little significance whether they progress beyond it, or the distance they have progressed beyond it may be very difficult or even impossible to measure. In this case it may be appropriate to use the non-graded pass (P) or the non-graded failure (N) (see: <http://www.uq.edu.au/student/GeneralRules2003/2003GARs.htm> Part 1A - Assessment)

and

<http://www.uq.edu.au/myadvisor/?page=2877>

These descriptors (and others like them) are generic. That is, they apply to some extent to any course, but are not specific enough to yield grades in any given course. Thus a first task is to write down versions of the grade descriptors for the course under consideration.

Writing course specific grade descriptors

Some intermediate steps

Grades should reflect the extent to which students have achieved a course's learning goals. The grade descriptors must be written so they help to do this. Thus, eventually, they must be course specific. Generic descriptors are a beginning, but they will not be sufficient to help in grading. One way to start writing course specific grade descriptors is to write new generic descriptors, phrased in terms of the extent of achievement of course learning goals.

Grade descriptors using core and enrichment course learning goals

It may be sensible to separate the course learning goals into those it is essential students achieve (call these 'core' goals) and those desirable or optional for students to achieve (call these 'enrichment' goals). Then it is possible to write a set of course learning-goals-related grade descriptors in which, 'satisfy the basic requirements' becomes 'achieves most of the core learning goals' and the descriptor for high distinction might be 'achieves all of the core learning goals and all or almost all of the enrichment learning goals'.

Comment: The high distinction descriptor implies that the enrichment learning goals are independent of each other. If this is not the case in your course then, of course, the descriptors will not fit.

Grade descriptors using varied levels of achievement of objectives

In some courses it does not make sense to talk about 'core' and 'enrichment' course learning goals. However, it may make sense to talk about the level at which a student has achieved each course learning goal: for example, inadequately, adequately, or well). A set of grade descriptors may then be written based on these levels. Here is an example, with the completely generic UQ descriptor preceding each slightly more specific objectives based descriptor:

1. Serious fail

Fails to satisfy most or all of the basic requirements of the course.

Shows inadequate or no achievement on almost all learning goals.

2. Fail

Fails to satisfy some of basic requirements of the course.

Shows inadequate achievement on the majority of learning goals.

3. Pass conceded

Falls short of satisfying all basic requirements for Pass but can be granted concession for the deficiencies through:

- being close to satisfactory overall, or

- having compensating strengths in some aspects of the course, or
- having compensating strengths in other courses, or
- other mitigating considerations.

Achievement is adequate or better on less than 75% of the learning goals. However, a substantial number of the learning goals have been achieved well.

4. Pass

Satisfies all of the basic learning requirements for the course, such as knowledge of fundamental concepts and performance of basic skills; demonstrates sufficient quality of performance to be considered satisfactory or adequate or competent or capable in the course.

Achievement is adequate or better on at least 75% of the learning goals, but of these less than one-third are achieved well.

5. Credit

Demonstrates ability to use and apply fundamental concepts and skills of the course, going beyond mere replication of content knowledge or skill to show understanding of key ideas, awareness of their relevance, some use of analytical skills, and some originality or insight.

Achievement is adequate or better on at least 75% of the learning goals, and of these one-third or more are achieved well.

6. Distinction

Demonstrates awareness and understanding of deeper and subtler aspects of course, such as ability to identify and debate critical issues or problems, ability to solve non-routine problems, ability to adapt and apply ideas to new situations, and ability to invent and evaluate new ideas.

Achievement is adequate or better on at least 90% of the learning goals and of these one-third or more are achieved well.

7. High distinction

Demonstrates imagination, originality or flair, based on proficiency in all the learning objectives for the course; work is interesting or surprising or exciting or challenging or erudite.

Achievement is adequate or better on at least 90% of the learning goals and of these three-quarters or more are achieved well.

Comment: You may find it useful to define 'inadequately', 'adequately' and 'well' in terms of Bloom's Taxonomy of Educational Objectives or John Biggs' SOLO Taxonomy.

Make the more generic descriptors specific to your course

Here are the course goals from Cynthia Mitchell's E1267 course profile.

At the completion of this course, you should be able to:

1. define and explain the two basic rules of communication
2. demonstrate your understanding of these rules in your own written and verbal communication
3. devise and confidently deliver clear written and oral proposals and reports
4. identify and analyse problems in your communication and work towards solving these
5. evaluate other people's written and oral communication skills
6. analyse your audience and communicate appropriately
7. adapt to working in teams of different people
8. apply basic engineering methodology to define and solve problems.

Example of grade descriptors using 'core' and 'enrichment'

Imagining that it is possible to separate these course learning goals into core and enrichment goals, we will designate objectives 1, 2, 3 and 6 as core. Thus 4, 5, 7 and 8 are enrichment objectives. Note this has been done purely as a possible example! These are not Cynthia's classifications - she may well feel all the goals are essential. Given the division into core and enrichment goals, the grade descriptors for this course are:

1. Serious fail

The student has achieved almost nothing in this course, either because of poor quality work or because of failure to attempt assigned work.

2. Fail

The student has achieved little of the work required for a pass.

3. Pass conceded

The student has achieved most of the requirements for a pass. The student may also have achieved some of the extra requirements for a credit, or have done particularly good work in some areas.

4. Pass

The student can define and explain the two basic rules of communication; the student's understanding of these rules is apparent in their own written and oral communication. The student is able to devise and deliver confidently clear written and oral proposals and reports which are appropriate to their intended audience.

5. Credit

The student will have achieved all the requirements for a pass. In addition they will be able to identify, analyse, and work towards solving problems in their own communication, and will be capable of evaluating the oral and written communications of others.

6. Distinction

The student will have achieved all of the requirements for a credit. They will also have shown that they can adapt to work effectively in varied teams of people.

7. High distinction

The student will have achieved all of the requirements for a distinction. They will also have shown that they use basic engineering methodology to define and solve problems in the areas of oral and written communication and, especially, of working effectively in teams.

Example of grade descriptors using varied levels of achievement of objectives

The grade descriptors are as they are in the 'halfway house' example above. Now, for each objective, it needs to be said how students can be judged to have achieved the objective adequately or well. This can be done in one of two ways: objective by objective, or more generally using, for example, one of the taxonomies.

Levels of achievement for specific objectives

Two examples:

1. Define and explain the two basic rules of communication.

- To achieve this learning goal adequately you must be able to write down in clear English the two rules. You must also be able to give at least one example illustrating each rule.
- To achieve this learning goal well you must be able to explain briefly how these rules might be derived from a simple theory of communication.

2. Devise and confidently deliver clear oral and written proposals and reports.

- To achieve this learning goal adequately you must be able to write a clear report which is appropriate for its purpose and to deliver a clear oral proposal which adequately addresses the brief.

- To achieve this learning goal well you must also deliver the proposal presentation confidently and without excessive verbiage, and express the report economically and in more elegant style.

Levels of achievement specified generically

Using Bloom's Taxonomy levels for the cognitive domain it could be specified that:

- To achieve a learning goal adequately students must be able to define and to explain in their own words the terms and concepts appearing in it. They must also be able to apply these concepts and terms in familiar and unfamiliar situations.
- To achieve a learning goal well students must be able to do all that students can do who achieve it adequately. In addition they must be able to compare and contrast terms and concepts appearing in the learning goal and to look at them critically. In some cases students will also be required to design new applications using the skills and concepts and to evaluate these applications.

In effect this says that adequate achievement means demonstrating knowledge, comprehension and application, while achieving well means also demonstrating analysis, synthesis and evaluation.

Other sets of generic grade descriptors

Many people have formulated generic grade descriptors to help in grading. How 'generic' they are varies. They may be intended to be generic across all of higher education, as is the first set mentioned below.

Generic critical thinking based grade descriptors can be found at this site:

<http://www.criticalthinking.org/university/unistan.html>

On the other hand they may be generic only within a discipline or set of disciplines. This example might be applicable in many of the social sciences:

<http://www.shef.ac.uk/geography/ug/handbook/assess/marking.html>

Giving feedback on assessed work

Definition

Feedback on assessed work is information for students about their attempts at that work. Feedback may be given to students individually on their own attempts or to larger groupings such as a whole class or tutorial group. Generally it will include at least three aspects:

- the strengths of the attempt(s)
- the weaknesses of the attempt(s)
- how the weaknesses might be strengthened or remedied without compromising the strengths.

Thus feedback responds to students attempts. In this sense it cannot be completely 'generic'.

By giving students feedback on their attempts at assessment exercises you can help to make sure that assessment plays a coherent and helpful role in helping students to learn.

Issues and options

Some of the issues in giving feedback on assessed work are what?, who?, how?, and when?. That is, who should give the feedback, what form should the feedback take, by what means should it be given, and when should it be given. Obviously the answers to these questions will vary according to circumstances, but some guidelines are given in the discussion below.

What forms may the feedback take?

Feedback may be explicit (for example, making a statement about a student's work) or implicit (as, for example, when a music teacher, having listened to a student's attempt, plays the piece, possibly emphasising points of difference). Even if explicit, it may be given orally (by a person on the spot or even, for example, by a marker speaking comments into a tape recorder), or in written form. In either case it might follow a formula (for example, by use of a formal 'feedback sheet') or be more free in form. Feedback may be in the form of statements or in the form of questions ("Why do you think the Normans acted in that way then?").

Even a numerical mark (or a gold star, or an elephant stamp) is feedback in a vestigial form' provided the meaning of the mark as a measure of the standard of the work is communicated to the student, it may be of some minimal assistance

to the student in their future learning. The form feedback will take will be determined to a large extent by some of the other factors.

Who should give the feedback?

Giving feedback may be part of a more extensive marking and grading process, or the feedback may be the only kind of mark that is given. The 'actors' in your teaching/learning situation will be the teaching staff and the students. You should consider all of the options when assessed work is to be marked and feedback is to be given. However, whoever marks the work should also supply the feedback.

Feedback certainly should be related to the learning of a course; however, there seems to be no reason why it always has to be supplied by the teacher (if there is a single, defined teacher for a course). Other possibilities are:

- tutoring or demonstration staff
- staff employed specifically (and, possibly, solely) to do marking
- the student his or herself (self assessment), perhaps based on criteria and standards supplied by the teacher
- other students in the class (peer assessment), again perhaps based on teacher-supplied criteria
- students not in the class (for example, students who have previously studied and excelled in the course)
- an automated system which generates feedback on the basis of a student's answers to assessment items. Such systems are particularly suited to assessments where the possible answers are reasonably small in number; multiple choice and short answer questions are familiar examples.

Peer and self assessment frequently are used to assess individual contributions to group work and thus to provide feedback. There is increasing agreement in the literature that, used appropriately, they can be valid and reliable measures of achievement. If either peer or self assessment is used then students need very clearly articulated criteria and standards for judgement. There seems to be a consensus in the recent literature that peer and self assessment work best if students have some training and practice in the method, criteria and standards to be used. Many authors also argue that these criteria and standards are best derived in negotiation with the students.

How should the feedback be given?

This will vary according to the nature of the assessment event, the purpose of the feedback, the size of the class and the likely workload of the person providing the feedback. Feedback on oral presentations, for example, may well be given orally either at the time of the presentation or later.

Feedback to large numbers of students

If you need to give feedback to large numbers of students (hundreds, for example) then you may want to use a form to help markers provide the feedback. Such a form might be centred around the criteria against which the assessment is to be based and may consist of a 'tick the box' rating for each criterion, together with a section for an overall comment and, possibly, an overall rating. The comment might focus on the steps the student could take to improve the assessment attempt, or it might serve to highlight particularly important strong or weak points in the student's work.

An example feedback form is provided over the page:

Feedback sheet for fieldwork report

The marker's assessment of each aspect of your report is shown by a tick in one of the five boxes lined up under that aspect. In general, the closer the tick is to the right hand side of the page the better your effort. A tick in the middle represents an effort which is of just acceptable standard.

Physical presentation

- | | | | | | | |
|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------|
| • messy layout | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | clean layout |
| • not or poorly bound | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | properly bound |
| • missing or unclear id | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | clear id |

The problem

- | | | | | | | |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| • problem not clearly posed | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | problem clearly and concisely posed |
| • problem trivial | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | problem important |

Project design

- | | | | | | | |
|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| • project unrelated to problem | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | project addresses |
| • project has no goals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | project has clear goals |
| • no evidence of forward | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | clearly set out plan |
| • project not feasible | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | project readily feasible |

Data

- | | | | | | | |
|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|
| • irrelevant to problem | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | allow problem to be addressed |
| • inaccurate, sloppy | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | accurate and clean |

Analysis

- | | | | | | | |
|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------|
| • irrelevant | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | clear, to the point |
| • incorrect | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | correct |

Conclusions

- | | | | | | | |
|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| • unclear, muddled | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | clear, logical |
| • unrelated to problem | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | arise of data, analysis |

Expression

- | | | | | | | |
|--------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------|
| • incomprehensible | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | clear, concise communication |
|--------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------|

Overall comment

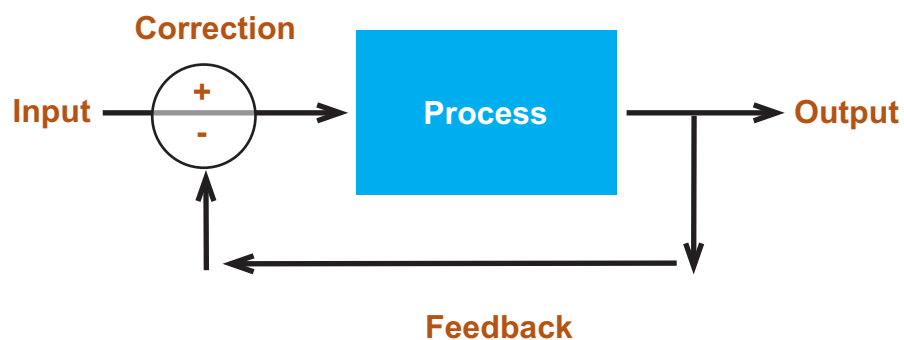
Marker

When should feedback be given?

While the general rule seems to be as soon as possible, there may be exceptions. For example, you may want students to think more about their attempts before giving them feedback, or you may want to give broad, general feedback initially and more specific feedback later. Some of the above issues are taken further in the following section.

A theoretical exploration of feedback

Using feedback is applying the outcome of an action to influence further actions. For example, when steering a car we use information about where the car is heading, together with information about where we want it to head, to determine where we now aim the car. When tuning a radio we use what we hear (our perception of the output) to help determine what we do next (whether to turn the tuning knob and in which direction). These processes are both concerned with steering something towards a more or less clearly defined goal. Feedback plays a crucial role in each of them.



Feedback, learning and assessment

Feedback is the feature that brings assessment into the learning process. Students studying your courses may also be thought of as pursuing goals; usually they do not have a single goal, but many goals. Some of the goals will have been set by you; some will have been set by the students. Your goal for them might be that they achieve as well as possible the objectives around which the course has been designed. The students' own goals might include that they achieve sufficient of the objectives in each of their courses to pass all of them. Your feedback probably will be aimed at helping them to achieve both your goals and their own.

At a minimum, feedback will aim to let students know:

- where they went or are going 'wrong' in achieving the objectives
- where they went or are going 'right' in achieving the objectives.

Neither of these alone is sufficient. Without the first students may perpetuate wrong strategies or continue to maintain incorrect knowledge, even while otherwise achieving the objectives. Without the second students may eliminate any known errors without completely achieving the objectives; what they do may be correct, but insufficient or incomplete.

Medical example

Imagine a student doctor correctly diagnoses an illness, but prescribes a lethal 'treatment'.

If only feedback about what is wrong is given then you might say: "Wrong! That treatment would kill the patient!" At this stage the intern knows only that he/she has selected a lethal treatment; he/she does not know whether the diagnosis was correct or in what way the treatment is lethal (wrong drug? wrong dose? adverse drug interaction?).

If only feedback about what is right is given then you might say: "Congratulations! That is the correct diagnosis." You would then see the patient killed by the erroneous treatment.

Obviously it is better in this case if you give both negative and positive feedback: "Congratulations! You have reached the best diagnosis available on the evidence. However, there is a problem with the treatment you propose - it is very likely it will kill the patient."

Corrective information

At this stage you may be thinking, "But why not tell the intern why or how the treatment would be lethal?"

This is a very pertinent question. In both the car steering and radio tuning examples there is a way of using the feedback to determine further actions. In each of these cases a person is part of the machine and that person decides on the basis of the feedback and the goals what to do next. In the example of an automatic pilot, a simple computer or control system decides on the basis of a method designed into the system, but the principle is the same.

For feedback to be useful there needs to be enough information in the system to work out how to right the wrongs without 'wronging the rights' - to correct errors without either losing what has been achieved or causing other errors.

Thus there are now three principles for effective feedback; that is, telling the student:

1. what they have achieved correctly
2. what they have done incorrectly
3. how they can improve their attempt (often how to correct errors without introducing more errors or negating previous achievements).

Timing of feedback

An interval may elapse between the provision of negative and positive feedback (in either order). For example, in the medical illustration above the first feedback might be “Stop! Don’t give that injection! It will kill the patient!”, while the praise for the correct diagnosis follows at leisure. In other situations you might wish to give positive feedback (praise) first, in order to soften the possible impact of the negative feedback (criticism). “You have done an excellent job in arriving at the correct diagnosis; however, before you proceed let’s have a closer look at the proposed treatment program. I think there is a problem with it.”

It seems likely that the first two principles given above always hold. This may not be true for the third. For example, if one of the goals of a program is that students become independent, self-directed learners then it might reasonably be expected that, at least by the end of the program, if students are told of the strengths and weaknesses in, for example, their answers to assessment exercises (as well as the criteria used in marking them) they will determine for themselves how to remedy the weaknesses while preserving the strengths.

To what extent do we want students to discover the remedies for their errors and to what extent do we tell them?

What about more generally applicable remedial feedback (e.g. “Why not try the ERIC database to look for more references on this topic?” “What search strategy did you use in the database? Did it detect the reference supplied in the problem statement?”).

Feedback in the form of questions

Feedback need not necessarily consist of statements or directives (“You need to read further on the role of the weather in Napoleon’s eventual defeat”), but often is more effectively formulated as questions (“What factors other than morale do you feel might have effected the outcome?”; “Were any environmental factors significant?”). Sometimes corrective feedback in the form of pointed or salient questions helps a teacher walk the fine line between providing too little (or no) corrective feedback and too much.

Time

The interval between getting the information and providing the feedback (and the interval between receiving the feedback and acting on it) can be very important. Feedback needs to be properly timed. Take too long and the feedback may arrive too late to change the student’s behaviour (like a car, headed for a precipice, the feedback may arrive too late to prevent the student ‘crashing’; or the student may have progressed, possibly on an erroneous base, to other matters, so that the feedback is no longer salient). On the other hand, if feedback is given too rapidly then the student may be so caught up in the original attempt that they cannot accept the feedback. You also may want the student for educational reasons to proceed on the basis of minimal feedback (“Would you like to try again?”) to remedy their own erroneous or deficient work. This will lead to greater ownership of the resultant knowledge, and possibly to more effective learning.

Notes on the nature of the feedback

Generic feedback for a whole class might consist of model answers, or of summaries of common good features and/or failings. This is only feedback in the strict sense if it actually is affected in some way by the attempts of students (i.e. model answers do not constitute feedback, although students may use them to generate feedback).

A checklist is a way to enable students to generate their own feedback.

The idea of providing opportunities/instruments to assist students to generate their own feedback (i.e. peer and self assessment) is worth exploring further. It starts to address the issue raised earlier of when feedback should include possible corrective measures!

How much feedback?

Too little feedback is useless; too much swamps the student. How are we to judge how much? This may come down to professional judgement in context. McKeachie (in Teaching Tips), for example, points out that feedback on writing quality in non-writing courses may well deflect students' attention from more important feedback of a substantive nature - they will fail to see the most salient points because of the detail.

Provide feedback in stages - see the discussion above of the intern about to kill a patient - arguably we should first provide feedback most salient to the immediate learning needs of the student.

Feedback to large classes

Large numbers may mean large workload in marking and in generating feedback. This may mean:

- using feedback sheets (pro formas) to be completed by the markers while marking
- using computer marked (possibly computer generated) assessment exercises
- strategically allocating available staff time to important marking/feedback tasks
- redesigning the assessment program with large amounts of feedback work in mind
- having the students themselves provide the feedback (peer and self feedback).

Linking feedback to the course learning goals

If the assessment in the course you are teaching is criterion referenced then you certainly will have course learning goals for the course and some link between the assessment exercises used and these objectives. You will also have:

- either a way of determining the standard reached on each of the assessment tasks (and hence on some or all of the learning goals) and a method ('algorithm') for determining the grades to be awarded to students from the standards they have achieved, or
- examples of students' work of various grades based on the objectives and criteria ('exemplars') and gathered to inform the judgement of those grading the work.

If, as they should be, assessment exercises used mainly to enhance learning are also linked to the course learning goals then feedback may be linked to the course learning goals once again.

If you are relying on exemplars to inform marking then the obvious way to provide feedback is to make the exemplars (or at least those of excellent answers) available to the class. Such feedback has two possible flaws:

- It is 'generic', not tailored to individual students' responses (indeed, in the strictest sense it is not feedback, since it is in no way derived from the 'input' - students' attempts at the assessment exercise).
- It does not indicate how students might improve their own work.

Feedback on assessment primarily aimed at grading and feedback on assessment primarily aimed at aiding learning

Exercises designed principally to contribute to a student's grade in a course are likely to cover the achievement of major, 'large scale' learning goals. While a student may still learn from feedback on their attempts at such exercises, assessment is likely to be against fairly coarse-grained criteria (thus leading to somewhat non specific feedback) and to be given to students whose focus may be on the learning of other topics, and who therefore may not be fully receptive to the feedback.

Assessment exercises where a major purpose is giving feedback to students may deal with 'smaller', more specific learning goals which enable the achievement of the broader but less specific course learning goals. For example, the use of correct grammar and syntax may be a very minor learning goal of the course (indeed, it may not even be stated overtly, with students simply being penalised for not achieving other goals should poor syntax and grammar make their meaning unclear). However, one of the purposes of some assessment may be to help students to diagnose and correct grammatical and syntactical problems before they become 'fatal' in other exercises; they may even be used as a trigger to direct a student to remedial programs elsewhere. Equally, you may make a choice that some major learning goals will not be assessed for grading purposes.

This might be because they are inherently difficult to assess (for example, the assessment of attitudes) or because they are pre-requisite to the achievement of other learning goals which are assessed for grading purposes, or possibly because to assess them would mean placing an excessive assessment load on students. In such cases feedback-only assessment may nonetheless guarantee that students have the opportunity to achieve the learning goals.