

Feedback for Effective Learning within Computing

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Centre for Professional Development, February 2007

The intended learning outcomes of the workshop:

That you will:

- understand some principles underpinning effective feedback;
- understand the importance of your role in tutorials and/or practicals in enhancing student learning through the provision of timely, constructive feedback; and
- develop strategies that you can use in tutorials and/or practicals to help you provide effective feedback that will assist student learning;

Thinking as either a student or teacher with the Department of Computing, what do you think feedback is within this context? What is its purpose?

→ Write down your thoughts. Compare your ideas with those of the person next to you.

What is Feedback

Feedback is the specific information that students receive that assists them to reflect upon their learning, and improve their future performance. Commonly, students think of feedback as the marks and comments they receive on their assessed assignments, however students can use and receive feedback in many ways that are not necessarily connected to an assessment piece.

A Model for Conceptualising Feedback

The diagram below presents a conceptual model of formative assessment and feedback (Nicol & Macfarlane-Dick, 2005), which is based upon a model of feedback and self-regulated learning (Butler & Winne (1995). Note that the student occupies a *central and active role in all feedback processes*.

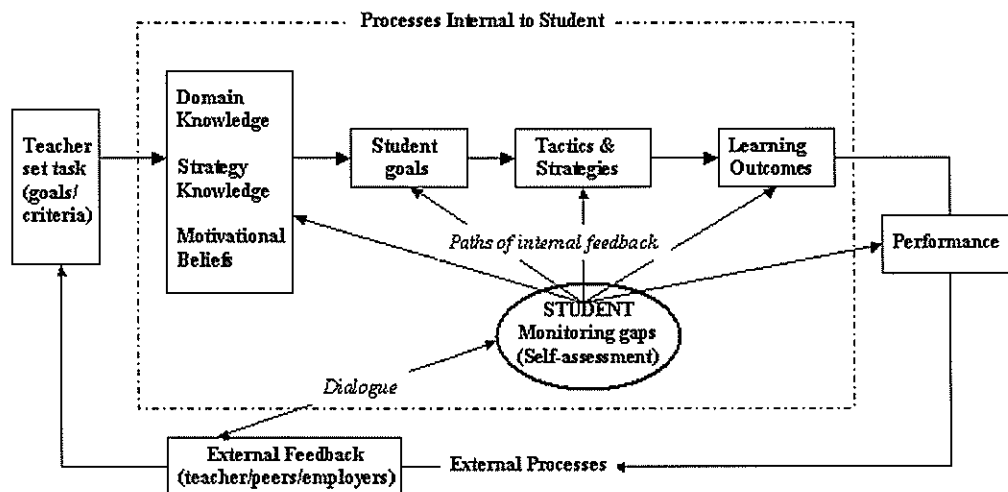


FIGURE 1: A Model of the Formative Assessment and Feedback

Principles Underpinning Effective Feedback

From this model Nicol and Macfarlane-Dick (2005) suggest that we can distil seven principles that underpin good practice in feedback. Feedback

1. Facilitates the development of self-assessment (reflection) in learning.
2. Encourages teacher and peer dialogue around learning.
3. Helps clarify what good performance is (goals, criteria, expected standards).
4. Provides opportunities to close the gap between current and desired performance.
5. Delivers high quality information to students about their learning.
6. Encourages positive motivational beliefs and self-esteem.
7. Provides information to teachers that can be used to help shape the teaching.

In a nutshell feedback is needed by teachers to adapt and adjust teaching to accommodate learning needs and by students to adapt and adjust their learning strategies.

The only way to tell if learning results from feedback is for students to make some kind of response to complete the feedback loop (Sadler, 1989). This is one of the most often forgotten aspects of formative assessment. Unless students are able to use the feedback to produce improved work, through for example, re-doing the same assignment, neither they nor those giving the feedback will know that it has been effective.
(Boud, 2000, p158)

If we really believe in these principles and want students to treat feedback as part of the learning process, then we need to ensure that the feedback we provide actually does give them information about their performance that is informative to *them*. The feedback that we provide should therefore:

- Be timely, prompt and informative;
 - so that students can recall what they did and thought at the time, and can use it for subsequent learning and work to be submitted
- Be about their progress in the unit and their learning;
 - linked to a clear statement of learning outcomes, and progression of learning so that students have clear indications of how to improve their performance
- Be focussed and consequential
 - linked to achievement, not effort and resulting in students reflecting and acting upon the feedback
- Be supportive of learning, including suggestions about ways in which they can improve.
 - so that students feel encouraged and motivated to improve their practice, leading to them being able to assess their own work.
- Be efficient and sustainable
 - so that staff persist with such good practice.

Who Should Give Feedback?

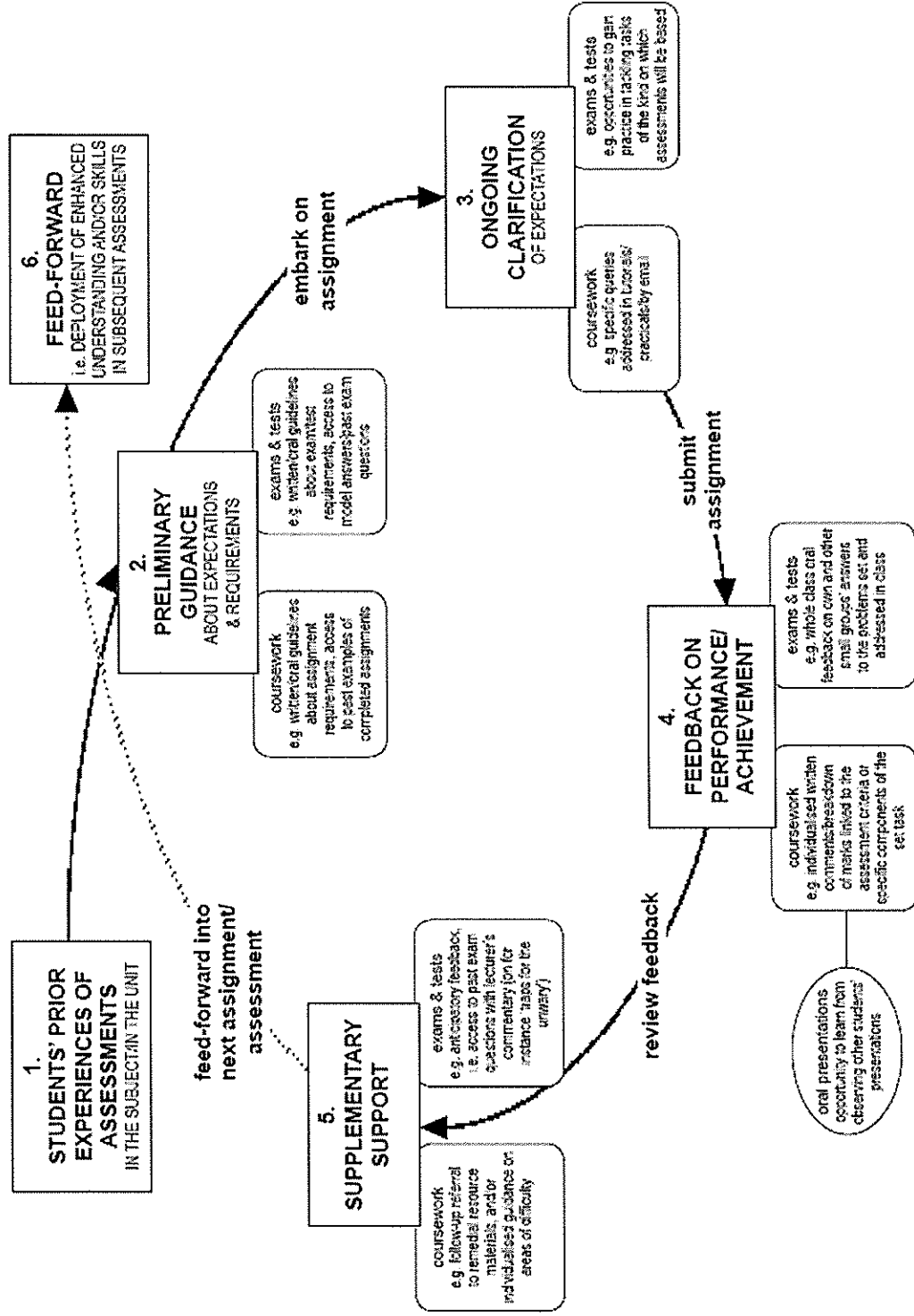
The provision of feedback is not something that should not be confined to the lecturer. Tutors and demonstrators are in an ideal situation to provide useful feedback as they usually see students in a more interactive situation and in smaller groups. Other possibilities for the provision of feedback include:

- staff employed specifically to do the marking,
- the students themselves (self-assessment / evaluation) based on set of criteria and standards,
- other students in the class (peer-assessment / evaluation),
- students who have previously done well in your class in previous years, and examples of their work,
- an automated, online system which generates feedback on the basis of students answers.

The Feedback and Guidance Loop

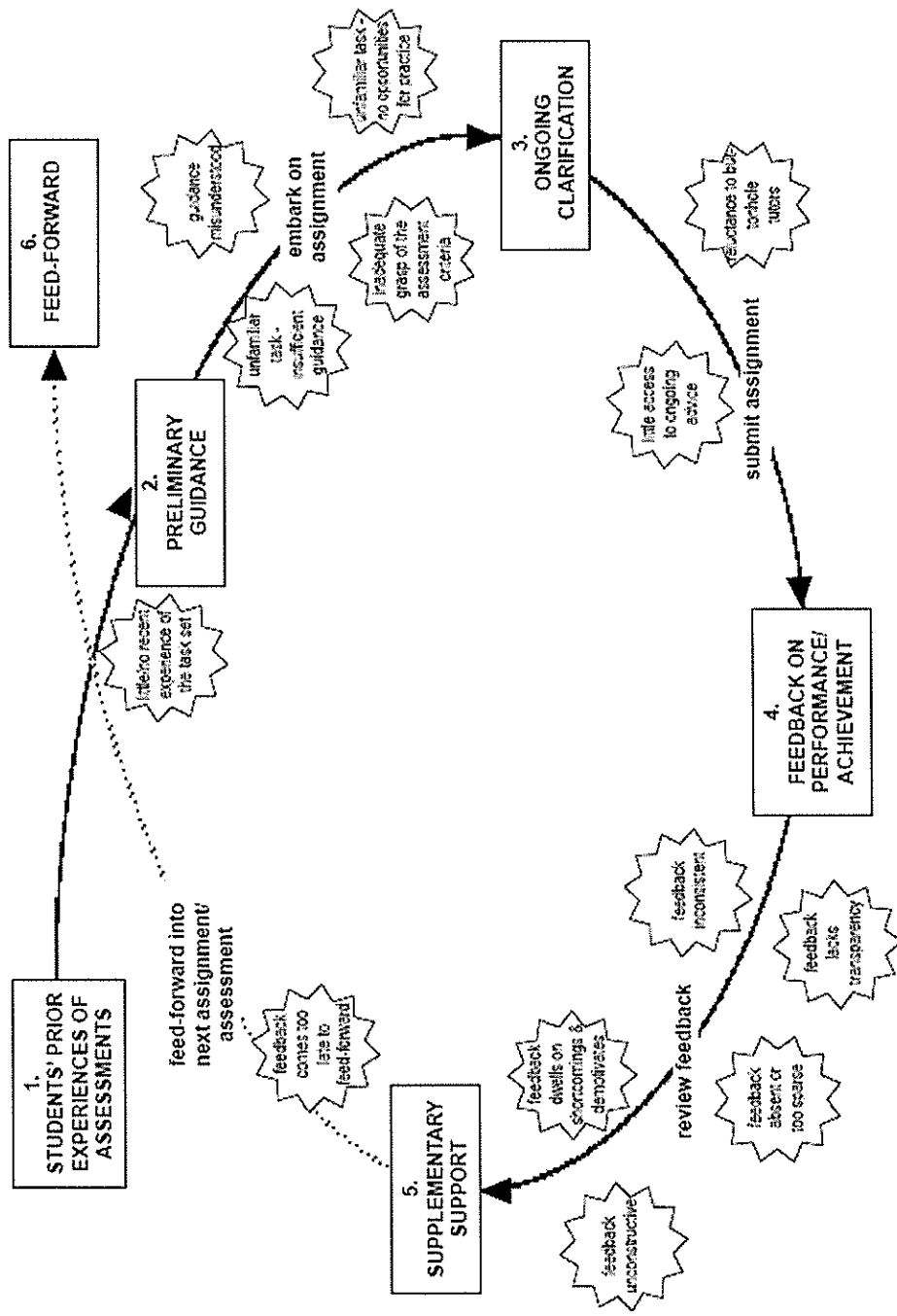
Hounsell, McCune, Hounsell and Litjens (2006) have illustrated a process that they call the 'Feedback and Guidance Loop' (see over) aimed at assisting teachers to improve their practice. The authors also indicate the potential troublespots of this loop (see the second diagram over). By paying attention to these troublespots, we are better able to attain 'best practice' in the feedback system.

The guidance and feedback loop



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Potential troublespots in the guidance and feedback loop



Consider the 'Feedback and Guidance Loop'

- a) Thinking back to a time when you were a student, what troublespots did you experience in the units you studied?
- b) In your capacity as either a tutor or demonstrator, where are you best placed to provide students with feedback?

→ Write down your thoughts about these two questions. Compare your ideas with those of the person next to you.

Difficulties with Providing Feedback

Of course, both academics and their students can experience difficulties with both giving and receiving feedback.

From the *academic's perspective*, it can be time-consuming and perceived to be of little value if the students don't read it or act upon it. They often feel that they are correcting the same errors all the time with little change in either individual student performance or the performance of the class as a whole.

From the *students' point of view*, the feedback is often occurs too late for them to be able to learn from it, and of course there is usually little incentive to act upon it. A common complaint from students is that the feedback they receive does not help them improve – they are left wondering what they did well and what they need to do to improve and receive a better grade.

What Forms can Feedback Take?

In order for feedback to enable students to learn more effectively, it should be provided to them in relation to all aspects of their learning (not only the assessable materials) and provided in a variety of ways (taken from <http://www.flinders.edu.au/teach/t41/assess/feedback.php>) including:

Informal	via worked examples (e.g. verbal feedback in class, personal consultation)
Formal	in writing (e.g. checklists, written commentary, generic exemplars)
Direct	to individual students (either in written form or in consultation)
Indirect	to whole class (e.g. generic exemplars)
Formative	given during the topic, enabling risk taking and adjustment prior to final submission
Summative	given at the end of a topic, with the purpose of letting students know what they have achieved.

Specific Feedback Strategies

1. Providing Feedback to Large Groups

Give students one of the tasks below. Collect and briefly review students' responses before the next class.

- The One Minute Paper (Appendix 3)
 - Students write for one minute on what their understanding is of the main idea of your class, or the point they found the most intriguing and questions that they still have.
- The Five Main Points (Appendix 4)
 - Getting students to highlight for you what have been the main points covered in your class gives you rapid feedback as to the extent to which your class is on top of the work.
- The Applications Card (Appendix 5)
 - Students brainstorm some of the ideas discussed in your lecture, tutorial or laboratory session, and then select two and illustrate ways that these ideas may be applied to everyday life.
- The Muddiest Point (Appendix 6)
 - Students write for one minute the idea that is least clear to them at that moment
- Concept Map
 - Students are given a few minutes to illustrate the relationship between ideas or to fill in a pre-drawn concept map with the links provided, but the concepts removed.

Teacher Follow-up

1. Having used one of the above tools or others that you know of, the teacher then gives feedback to the class in relation to their responses. This can be done in the following way (adapted from <http://www.flinders.edu.au/teach/t4l/assess/feedback.php>):
 - i. As students come into your next class and get settled, put up an overhead outlining the main ideas / skills addressed in the last class.
 - ii. Hand out an A4 sheet to the entire class with
 - A distillation of the class' responses, or
 - Examples of some misconceptions that you have identified from their responses, with some explanations about why they were not correct together with appropriate resources for follow-up study to correct the misconception.
 - iii. Use the first 5 minutes of your class giving students a verbal response to their feedback, perhaps going over misconceptions, praising 'correct' answers and perhaps answering questions.
 - iv. Base your next class around your students' learning needs.
2. Provide students with ideal answers with which they can compare their own answers. Ideally, students should be required to correct their work as necessary making observations as to where and why they went wrong.
3. Provide students with a succinct page of *generic feedback* that is common for all students, and that briefly describes the characteristics of papers that achieved each grade. This enables students to see how their work fitted into a scope of possible achievements. It provides students answers and ideas to provide clarification of misconceptions on a broad scale, rather than a private written/verbal consultation with individual students which loses the comparison with peer responses element.

2. Providing Feedback to Individuals

There are a number of strategies that you can use to provide individuals with feedback, both require you to develop a template consisting of criteria to be addressed in an assignment or during that class. Examples include:

- i. Checklists and marking guides (Appendix 7)
 - Students undertake the development of their work in relation to the checklist, and conduct self-evaluation of a their work of performance prior to submission to check that particular areas or issues have been covered. Students can then refine work as necessary in relation to the feedback they receive based on this checklist.
- ii. Negotiated feedback

- Students request the nature of feedback they wish from their teacher via a request form. The teacher then provides the specific feedback. This is most useful as formative feedback on an assessment item.

More specific strategies related to each of the Seven Principles of effective feedback are outline in Appendix 1.

References

Boud, D. (2000). Sustainable assessment: rethinking assessment for the learning society. *Studies in Continuing Education*. 22 (2), 151-167.

Nicol, D, J. & Macfarlane-Dick (2005). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice, *Studies in Higher Education*.

Teaching and Learning at Flinders (2007). Teaching Strategies: Giving Feedback. URL: <http://www.flinders.edu.au/teach/t4l/assess/feedback.php>, retrieved February 16, 2007.

TEDI (2007). Teaching and Learning Support: Grades and Feedback. URL: <http://www.tedi.uq.edu.au/teaching/assessment/grades.html>, retrieved February 16, 2007.

Appendix 1: Strategies that can help achieve our 7 Principles of Good Feedback Practice (from Nicol & MacFarlane-Dick, 2005)

1. Facilitates the development of self-assessment (reflection) in learning.

Examples of structured reflection and/or self-assessment are varied and might include students:

- (1) Requesting the kinds of feedback they would like when they hand in work;
- (2) Identifying the strengths and weaknesses in their own work in relation to criteria or standards before handing it in for teacher feedback;
- (3) Reflecting on their achievements and selecting work in order to compile a portfolio;
- (4) Setting achievement milestones for a task and reflecting back on progress and forward to the next stage of action.
- (5) Having students give feedback on each other's work (peer feedback) also helps support the development of self-assessment skills (e.g. Gibbs, 1999).

2. Encourages teacher and peer dialogue around learning.

Good examples of feedback dialogue in class include:

- (1) providing feedback using one-minute papers (Cross and Angelo, 1990);
- (2) reviewing feedback in tutorials where students are asked to read the feedback comments they have been given and discuss these with peers (they might also be asked to suggest strategies to improve performance next time);
- (3) asking students to find one or two examples of feedback comments that they found useful and to explain how they helped.

Other ways of using feedback dialogue in a planned way, for assignments, might involve:

- (1) having students give each other descriptive feedback on their work in relation to published criteria before submission; and (2) group projects.

3. Helps clarify what good performance is (goals, criteria, expected standards).

Strategies that have proved effective in clarifying criteria, standards and goals therefore include:

- (1) providing better definitions of requirements using carefully constructed criteria sheets and performance level definitions;
- (2) providing students with exemplar assignments with attached feedback;
- (3) increasing discussion and reflection about criteria and standards in class;
- (4) involving students in assessment exercises where they mark or comment on other students' work in relation to defined criteria and standards;
- (5) workshops where students in collaboration with teacher devise their own assessment criteria for a piece of work.
- (6) Combinations of the above five have proved particularly effective.

4. Provides opportunities to close the gap between current and desired performance.

Specific strategies to help students use external feedback to close the gap are:

- (1) to increase the number of opportunities for re-submission;
- (2) for teachers to model the strategies that might be used to close a performance gap in class (e.g. model how to structure an essay when given a new question);
- (3) teachers might also write down some 'action points' alongside the normal feedback they provide. This would identify for students what they should do next time to improve their performance;
- (4) a more effective strategy might be to involve students in identifying their own action points in class based on the feedback they have just received. This would integrate the process into the teaching and learning situation and involve the students more actively in the generation and planned use of feedback.

5. Delivers high quality information to students about their learning.

Strategies that increase the quality of feedback drawn from research include:

- (1) making sure that feedback is provided in relation to pre-defined criteria but paying particular attention to the number of criteria;
- (2) providing feedback soon after a submission;
- (3) providing corrective advice not just information on strengths/weaknesses;
- (4) limiting the amount of feedback so that it is used;
- (5) prioritising areas for improvement;
- (6) providing online tests so that feedback can be accessed anytime, any place and as many times as students wish;
- (7) focusing on students with greatest difficulties.

6. Encourages positive motivational beliefs and self-esteem .

The implication of these studies for teaching practice is that motivation and self-esteem are more likely to be enhanced when a course has many low-stakes tasks with feedback geared to providing information about progress and achievement rather than high stakes summative assessment tasks where information is only about success or failure or about how students compare with peers. Other strategies that would help encourage high levels of motivation to succeed include:

- (1) providing marks on written work only after students have responded to feedback comments;
- (2) allocating time for students to re-write selected pieces of work – this would help change students' expectations about purpose;
- (3) automated testing with feedback;
- (4) drafts and resubmissions.

7. Provides information to teachers that can be used to help shape the teaching.

A variety of strategies are available to teachers to help generate and collate quality information about student learning and help them decide how to use it. For example:

- (1) one-minute papers where students carry out a small assessment task and hand this in anonymously at the end of a class (e.g. what was the main point of this lecture?; what question remains outstanding for you at the end of this teaching session?);
- (2) having students request the feedback they would like when they make an assignment submission;
- (3) having students identify where they are having difficulties when they hand in assessed work;
- (4) asking students in groups to identify 'a question worth asking', based on prior study, that they would like to explore for a short time at the beginning of the next tutorial;
- (5) quick evaluation strategies at key points in teaching.

Appendix 2: A Case Study - Feedback in practice
(<http://www.flinders.edu.au/teach/t4l/assess/feedback.php>)

An academic who questioned the value of his diligent editing of students' texts especially when assignments lingered in his office for over a year because student failed to collect them. He paid a graduate student to survey his undergraduate students and found that students did not read what he had written on their assignments and particularly did not use his comments as a reference for the next assignment.

His solution was:

On the first assignment

1. Resist writing all over the assignment.

Note a particular type of error once, and indicate that the student needs to look for other potential errors and find out a way to correct them, for example:

- **poor spelling**
 - advise them to use a spell checker etc.
- **poor grammar**
 - direct them to advice or use a computer program
- **poor structure and design**
 - direct them to courses or books on essay writing **poor conceptualizing** redirect them to texts
- **lower level cognitive achievement** e.g. simple retelling of the text;
 - describe it and explain what you are looking for instead.

2. Give students only three or four pieces of advice about changes/improvements.

3. Expect the advice to be attended to for subsequent paper(s).

4. Make the grade assigned to the subsequent paper contingent upon students' clear and specific indication about how they had acted upon the prior advice.

This teacher required that the first essay and his feedback be returned with the subsequent assignment with a single page explanation of the ways in which they had acted on the advice provided in the prior assignment. In this case, the final paper his students submitted merely received a grade with no written comments. His rationale for this was largely based on an assumption that students will not have the opportunity to act on advice at the end of a topic.

This type of approach to feedback:

- reduces the 'one-off' nature of most assignment demands
- makes students take responsibility for their own learning
- increases the value added nature of your teaching (you can indicate improvements made for all students)
- increases the opportunity for high achieving students as well as low achieving students to get constructive feedback
- helps to increase students' meta cognitive awareness
- reduces the hoop jumping approach to assessment and the repetitive nature of assignment writing and giving feedback.

Assessment

The Minute Paper

Please answer each question in 1 or 2 sentences:

1. What was the most useful, meaningful, or intriguing thing you learned during this session?

2. What question(s) remain uppermost in your mind as we end this session?

Source: Angelo, T. A. & Cross, K. P. 1993 *Classroom Assessment Techniques*, San Francisco, Josey-Bass Publisher

Assessment

THE 5 MAIN POINTS

Write down the main idea of this lecture in one or two sentences.

List the 5 pivotal issues addressed in this lecture

1. _____
2. _____
3. _____
4. _____
5. _____

Assessment

Applications Card

Directions: Please take a moment to recall the ideas, techniques and strategies we've discussed – and those you've thought up – to this point in the session. Quickly list as many possible applications as you can. Don't censor yourself! These are merely possibilities. You can always evaluate the desirability and/or feasibility of these applications ideas later.

*Interesting
IDEAS/TECHNIQUES
from this session*

*Some possible
APPLICATIONS
of those ideas/techniques
to my work*

Source: Angelo, T. A. & Cross, K. P. 1993 *Classroom Assessment Techniques*, San Francisco, Josey-Bass Publishers

Assessment

The “Muddiest” Point

What was the “muddiest” point so far in this session?

(In other words, what was least clear to you?)

UQ110051 Information Systems Practice 1 Presentation Assessment Guidelines

Criterion	Indicative feedback for...				
	...1 st class mark	...2(i) class mark	...2(ii) class mark	...3 rd class mark	...fail mark
Oral Communication (max 10)	Fluent, articulate, demonstrates good listening and verbal economy	Generally good - occasionally interrupts or rambles	Average - could plan more	Frustrating conversational style	Either inarticulate or verbose; no evidence of listening
Visual Aids (max 10)	Economical use of effective aids having clarity, colour, relevance, interest and imagination	Generally good, displaying only 3 factors (clarity, colour, relevance)	Average, aids not always relevant to verbal presentation	Over fussy and unclear	Inappropriate use of poorly made aids
Persuasiveness (max 10)	Sensitively and economically wins others commitment	Reasonably assertive with inappropriate force at times	Wins only after a struggle to get views heard	Generally unconvincing	Irrelevant or inarticulate expression, ideas scorned or ignored
Innovation & creativity (max 10)	Quicksilver mind, demonstrates creative thinking	Alert, makes mental connections	Occasional creative insights	Contributes occasionally to group creativity, but as a follower	No evident creativity
Project information (max 10)	Factual and well-researched from many sources, logically arranged	Variety of information, but some not relevant	Good information but more supporting information needed	Limited information from few sources	Very little reliable information
Selection of relevant material (max 10)	All module material relevant to the issues addressed	Made use of most module material relevant, but some marginal to main issues	Some relevant module material used, with serious omissions	Irrelevant use of module material; a few good points	Irrelevant or no use of module material
Awareness of wider business issues (max 10)	Fully aware of society, politics and recognises business issues	Some gaps in awareness, but still exceeds requirements	Good understanding	Evident gaps in awareness and implications	Scant awareness of outside world
Reflective content and learning (max 10)	In-depth reflective content, demonstrate rich learning	Useful reflection and a good account of learning	Some reflective content with references to learning outcomes	Minimal reflective content with some attempt to demonstrate learning	Inadequate - no reflective content
Planning & management (max 10)	Well crafted and well presented, flowing, clear and appropriate	Well crafted but poorly presented	Reasonably crafted	Ill thought out, casual, generally unimpressive	Inadequate, inappropriate
Timing & scope (max 10)	Perfect timing, excellent scope	Well timed with a reasonable scope	Average - scope or timing could have been improved	Inadequate timing or scope (but not both)	Grossly over- or under-ran time; inadequate scope

UQ1100S1 Information Systems Practice 1 In-class Presentation Assessment/Feedback Sheet

Tutor:
Company:

<i>Criterion:</i>	<i>Feedback/marks awarded</i>				
	<i>Name:</i>				
Oral Communication (max 10)					
Visual Aids (max 10)					
Persuasiveness (max 10)					
Innovation & creativity (max 10)					
Project information (max 10)					
Selection of relevant material (max 10)					
Awareness of wider business issues (max 10)					
Reflective content and learning (max 10)					
Planning & management (max 10)					
Timing & scope (max 10)					
<i>Summary</i>					
<i>Total mark:</i>		%	%	%	%