rubrics that the students fully understand. These rubrics act as signposts to students for preparing for assessment – for examples, see Tables 10.2 (p. 210) and 10.4 (p. 214). After assessment, students can compare their actual grade with the criteria for higher grades and thus reflect on why their actual grade may not have been as high as they would have liked. They wouldn't have the faintest idea of the quality of their actual performance if they received a norm-referenced grade such as 'You were in the 60–70% range.'

2 One assessment task may address several ILOs. One AT per ILO can easily lead to an overload of assessment for the student. *Synoptic* assessment is where a large task addresses several ILOs and may even be used to assess ILOs in different courses, as in a research project or a capstone project. We deal with these modes of assessment in the next chapter. One final exam is traditionally used synoptically, but this is likely to be effective only when the ILOs are all declarative and all the students are Susans.

3 By the same token, one ILO may be addressed by more than one assessment task. For example, an assignment and a reflective diary may each have something to say about an ILO 'reflect and improve'. It helps to see each AT as a *source of evidence* of a student's achievement of any ILO. You can have one source of evidence or several, just as in (2) in this list, one task may provide evidence relating to more than one ILO.

4 In selecting assessment tasks, the time spent by students performing them and by staff assessing students' performances, should reflect the relative importance of the ILOs. This is frequently breached when there are compulsory final examinations ('70% of the final grade must be by final examination'). In this case, most of the assessment is likely to be focusing on ILOs addressing only declarative knowledge ('describe', 'explain', 'argue'), while more important ILOs that can't be easily assessed in the exam situation ('apply', 'design', for example) are assessed by tasks worth only 30% of the final grade.

5 An important practical point is that the assessment tasks have to be *manageable*, both by students in terms of both time and resources in performing them and by staff in assessing students' performances. For example, a portfolio would be impracticable in a large class.

These principles apply to ILOs addressing both declarative and functioning knowledge. Table 10.1 (p. 197) gives lists of typical verbs at different SOLO levels illustrating each of declarative and functioning knowledge.

For the rest of this chapter, we focus on declarative knowledge verbs (in the left-hand column), and in the next, we address some illustrative functioning knowledge verbs.

Table 10.1   Some typical declarative and functioning knowledge verbs by SOLO level

	Declarative knowledge	Functioning knowledge
Unistructural	Memorize, identify, recite	Count, match, order
Multistructural	Describe, classify	Compute, illustrate
Relational	Compare and contrast explain, argue, analyse	Apply, construct, translate, solve near problem, predict within same domain
Extended abstract	Theorize, hypothesize, generalize	Reflect and improve, invent, create, solve unseen problems, predict to unknown domain

Assessing declarative knowledge

Typical declarative ILOs would include: identify, describe, list, explain, argue, compare and contrast. In these, the student is required orally or in writing to say something *about* a topic or body of knowledge, not necessarily to *do* anything with that topic. There are two main formats of assessment addressing these ILOs: questions that probe the student's knowledge base, to which students write extended prose in answer; and objective format, usually in the form of the MCQ.

How important is the format of assessment? In a word: very. Different formats produce typical forms of backwash. In preparing for exams, students use memorization-related activities, assignments application-related activities (Tang 1991). Tang found that an assignment required deep learning from the students with respect to one topic; the exam required acquaintance with a range of topics, which allowed a high degree of surface learning. The teachers concerned realized the assignment better addressed their ILOs, but only with respect to one topic. They accordingly adopted a policy to use both: short answer exams to ensure coverage, the assignment to ensure depth.

As for MCQs, students see them as requiring low cognitive-level processes and so they avoid a deep approach when studying for them, while they see essays as requiring higher level processes and so use them (Scouller 1996, 1998). Some students were actually angry at being assessed by MCQs, feeling they did not do justice to their learning (see Box 10.1).

So format is important. The lesson so far is that MCQs address lower order ILOs containing verbs such as 'memorize', 'recognize', 'identify', 'match' and essays have a better potential for assessing higher levels of declarative ILOs such as 'explain', 'argue', 'analyse' and 'compare and contrast'.

Let us deal first with what is the most common format for assessing declarative knowledge, essay-type answers to specific questions, first in invigilated situations – the typical exam – and then in open situations, such as the assignment.

Box 10.1   Two examples of students' views on multiple-choice tests

I preferred MCQ . . . It was just a matter of learning facts . . . and no real analysis or critique was required, which I find tedious if I am not wrapped in the topic. I also dislike structuring and writing and would prefer to have the answer to a question there in front of me somewhere.

A multiple choice exam tends to examine too briefly a topic or provide overly complex situations which leave a student confused and faced with "eenie, meenie, minie, mo" situation. It is cheap and, in my opinion, ineffectual in assessing a student's academic abilities in the related subject area.

Source: Scouller (1997)

Assessment under timed invigilation: 'Exam conditions'

The major reasons for the ubiquity of the standard 'exam' have less to do with assessment theory as with management issues. Because the situation of invigilating students in a timed context effectively minimizes plagiarism, many universities require a percentage at least of the summative assessment leading to a student's final grade to be assessed in this situation (we deal with the question of plagiarism later; pp. 240–3).

Assessment in this context is quite extraordinary when you think about it. It is about the only situation, outside TV quiz shows, when somebody is asked to write answers to questions to which the person who asked the questions already knows the answers! Nobody is telling anything new to anybody. This is not what good communication is about, which implies that new information is conveyed. Such assessment is hardly in keeping with a graduate attribute requiring communication skills.

However, there is a place for such convergent assessment in order to check the depth and accuracy of students' knowledge. No, of course we can't ask all the questions that would tap the sum total of a student's knowledge, but we can sample areas of it. It is a little like shooting fish in muddy water and concluding that the number of fish you hit is an indication of how many fish are there. Not a very edifying metaphor for student assessment, but as shooting fish with pointed questions is so entrenched as to be inevitable, let us go along with that for a while. That same metaphor does, however, remind us that we should also be thinking of complementary formats of assessment that are open to considering evidence that we ourselves had not thought of. For example, portfolio assessment allows students to tell us what they consider to be evidence for their learning in relation to the ILOs and that they would like us to consider.

But apart from all those missed fish, it is very *convenient* to have a time and a place nominated for the final assessment. Teachers, students and administration can work around that: everyone knows where they stand. Further, nobody has an 'unfair advantage': all is standardized. But in that case do you allow question choice in a formal examination? Surely. But then you violate the standardization condition, because all candidates are not then sitting the 'same' examination (Brown and Knight 1994). Does that worry you?

It is sometimes claimed that the time constraint reflects 'the need in life to work swiftly, under pressure and well' (Brown and Knight 1994: 69). However, in real-life situations where functioning knowledge is time-stressed – the operating theatre, the bar (in law courts, that is), or the classroom – this point is better accommodated by performance assessment, rather than by pressurizing the assessment of declarative knowledge in the exam room. Alignment suggests that time constraints be applied only when the target performance is itself time constrained.

Time constraint creates its own backwash. Positively, it creates a target for students to work towards. They are forced to review what they have learned throughout the course, and possibly for the first time see it as a whole: a tendency greatly enhanced if they think the exam will require them to demonstrate how holistic their view of the course is and not just a series of easy-to-predict questions about particular topics. The format can be open ended, so theoretically students can express their own constructions and views, supporting them with evidence and original arguments. The reality, however, is often different.

The more likely backwash is negative, with students memorizing specific points to be recalled at speed (Tang 1991). Even so, there are different ways of memorizing: Susan creates a structure first, then memorizes the key access words ('deep memorizing'), while Robert simply memorizes unconnected facts (Tang 1991). So while timed exams encourage memorizing, this is not necessarily *rote* memorizing or surface learning. Whether it is or not depends on the students' typical approaches to learning and on what they expect the exam questions to require.

Open-book examinations remove the premium on memorization of detail, but retain the time constraint. Theoretically, students should be able to think about higher level things than getting the facts down. Baillie and Toohey (1997) moved from a traditional examination in a materials science course to a 'power test' – an open-book exam, with opportunities for collegial interaction – with positive results on students' approaches to learning. Students need, however, to be very well organized and selective about what they bring in, otherwise they waste time tracking down too many sources.

Does the time constraint impede divergent responses? Originality is a temperamental horse, unlikely to gallop under the stopwatch or to flourish in the climate of a stern regimented silence. One needs only to compare the quality of a term assignment with that of an exam response on the same topic to see that difference. In our experience, Susans excepted, exam texts are dull, crabbed and cloned; most students focus on the same content to

memorize and use the same examples as given in class or in the text. And isn't it so boring for us to be told over and over what we know already? The assignments of the same students, contrariwise, are often fresh, frequently telling us something we didn't know before, and sometimes even appear to have been written with pleasure.

It is possible for students to display originality in examinations – especially if they can prepare their original answers at leisure. But then they need to know the questions, at least in general outline. You can encourage this high-level off-track preparation by making it known you intend asking open questions ('What is the most important topic you studied in the course this semester? Why?') or by telling the students at the beginning of the semester what the exam questions will be – but then, of course, they have to be complex questions, open to different interpretations and this strategy is open to the criticism that it could encourage plagiarism and memorization of the plagiarized source. Assessing divergent responses cannot be achieved by using a model-answer checklist, because it does not allow for the well-argued surprise.

In short, while the exam can elicit high-level responding from Susan, Robert underperforms in the timed, invigilated setting, especially when he knows that he can get by with memorization. As we shall see in the section on assessing in large classes (pp. 232–8), there are better ways of using that invigilated space than asking for written answers to closed questions. When universities require a proportion of invigilated assessment in the final grade, it is all the more important that alternatives to the closed-answer format are used.

Exams are almost always teacher assessed, but need not be. The questions can be set in consultation with students, while the assessing and awarding of grades can be done by the students themselves and/or their peers. Boud (1986) describes a conventional mid-session examination, where students in an electrical engineering course were, after the examination, provided with a paper of an unnamed fellow student and a detailed model answer and asked to mark it. They then did the same to their own paper, without knowing what marks someone else might have given it. If the self- and peer-assessed marks were within 10%, the self-mark was given. If the discrepancy was greater than 10%, the lecturer remarked the script. Spot checking was needed to discourage collusion ('Let's all agree to mark high!'). Student learning was greatly enhanced, as the students had access to the ideal answer, to their own match to that and the perspective of someone else on the question – and teacher marking time was slashed by nearly a third.

Oral assessments

Oral assessments have something in common with an invigilated situation. They are used most commonly in the examination of dissertations and theses. In the last case, the student constructs a thesis that has to be defended

against expert criticism. These oral defences are most frequently evaluated holistically and qualitatively. The components of the dissertation, such as literature review, methodology and referencing, are usually not examined analytically but are treated as hurdles that have to be cleared before the assessment itself proceeds. The interview is not used in undergraduate assessment as widely as it might be. A properly constructed interview schedule could see a fruitful interview through in 20 minutes or so, while carefully run group interviews could deal with four or five students at a time. Interviews are not necessarily as time consuming as they appear to be and they are even more plagiarism proof than an invigilated exam.

Unstructured interviews can be unreliable, but a major advantage of interviewing, that it is interactive, is lost if the interview is too tightly structured. Teachers are able to follow up and probe and students to display their jade, pearls and opals – their unanticipated but valuable learning treasures. Oral assessments should be tape recorded so that the assessment itself may be made under less pressure, and the original assessment can be checked in case of dispute when student and an adjudicator can hear the replay.

Assessing extended prose under open conditions

Assessing extended prose written under non-invigilated conditions, such as assignments, raises some important questions. Many years ago, Starch and Elliott (1912; Starch, 1913a, 1913b) originated a devastating series of investigations into the reliability of assessing essays. Marks for the same essay ranged from bare pass to nearly full marks. Sixty years later, Diederich (1974) found things just as bad. Out of the 300 papers he received in one project, 101 received every grade from 1 to 9 on his nine-point marking scale.

The problem was that the judges were not using the same criteria. Diederich isolated four families of criteria:

- *ideas*: originality, relevance, logic
- *skills*: the mechanics of writing, spelling, punctuation, grammar
- *organization*: format, presentation, literature review
- *personal style*: flair.

However, different judges disagreed about their relative importance, some applying all the criteria, others applying one or few.

Maximizing stable essay assessment

The horrendous results reported by Starch and Elliott and by Diederich occurred because the criteria were unclear, unrecognized or not agreed on. There should have been some kind of moderation procedure, where teachers need collectively to clarify what they really are looking for when assessing different tasks and use an agreed set of criteria or rubrics. The reliability of their interpretations of the criteria by each may be tested by assessing a

sample of the same scripts and repeating this procedure until they reach a high degree of consensus, say of the order of 90% within a range, say, of ± 1 grade. The criteria not only need to be used, the levels of acceptability (A to F) in meeting the criteria need to be defined. 'Ideas', for example, has three subscales: originality, relevance and logic. How do you define an 'A' level of originality? A 'B' level? Table 10.2 (p. 210) gives an example of a set of rubrics for marking an assignment on arguing a case.

Halo effects are a common source of unreliability. Regrettable it may be, but we tend to judge the performance of students we like more favourably than those we don't like. Halo effects also occur in the order in which essays are assessed. The first half-dozen scripts tend to set the standard for the next half-dozen, which in turn reset the standard for the next. A moderately good essay following a run of poor ones tends to be assessed higher than it deserves, but if this same essay follows a run of very good ones, it is assessed at a lower level than it deserves (Hales and Tokar 1975).

Halo and other distortions can be greatly minimized by discussion. There is some really strange thinking on this. A common belief is that it is more 'objective' if judges rate students' work without discussing it. In one fine arts department, a panel of teachers independently awarded grades without discussion, the student's final grade being the undiscussed average. The rationale for this bizarre procedure was the postmodern argument that the works of an artist cannot be judged against outside standards. Where this leaves the assessment process itself is a thought to ponder.

Disagreement between external examiners for research dissertations is best resolved by discussion before the higher degrees committee adjudicates, but this is comparatively rare in our experience. Such disagreements are more commonly resolved quantitatively: by counting heads or by hauling in additional examiners until the required majority is obtained. In one university, such conflicts were until recently resolved by a vote in senate. The fact that the great majority of senate members hadn't even seen the thesis aided their detachment, their objectivity unclouded by mere knowledge.

Once the criteria or rubrics for assessment have been decided (see Table 10.2 for an argue-a-case assignment), the moderation procedures just mentioned should be implemented, whereby all assessors agree on the interpretation and application of the rubrics. The following additional precautions in any summative criterion-referenced assessment procedure suggest themselves:

- Before the assessment itself, the wording of the questions should be checked for ambiguity and clarity by a colleague.
- All assessment should be 'blind', the identity of the student concealed.
- All rechecking should likewise be blind, the original assessment concealed.
- Each question should be assessed across students, so that a standard for each question is set. Assessing by the student rather than by the question allows more room for halo effects, a high or low assessment on

one question influencing judgment on the student's answers to other questions. Criterion-referenced and outcomes-based assessment refers to performances, not to students.
- Between questions, the papers should be shuffled to prevent systematic order effects.
- Grade into the full letter grades, A, B, C, and D first, then discriminate more finely into A+, A, A– etc.
- Recheck borderline cases.

Objective formats of assessment

The objective test is a closed or convergent format requiring one correct answer. It is said, misleadingly, to relieve the marker of 'subjectivity' in judgment. But 'judgment' won't go away. In objective tests, judgment is shifted from scoring items to choosing items and to designating which alternatives are correct. Objective testing is not more 'scientific' nor is it less prone to error. The potential for error is pushed to the front end, in producing items that can address higher order ILOs, which is difficult and time consuming to do properly – and doing it properly includes pilot testing items. The advantage is that the cost benefits rapidly increase the more students are tested at a time. With machine scoring, it is as easy to test 1020 students as it is to test 20: a seductive option.

There are many forms of the objective test: true–false, multiple choice (MCQ), matching items from two lists and ordered outcome. We consider the MCQ, and its lookalike, but very different, ordered-outcome format.

Multiple-choice questions

The MCQ is widely used. Theoretically, it can assess high-level verbs, but practically they rarely do. As we saw, some students look back in anger at the MCQ for not doing so (see Box 10.1, p. 198).

MCQs assess declarative knowledge, usually in terms of the least demanding cognitive process, recognition. But probably their worst feature is that MCQs encourage the use of game-playing strategies, by both student and teacher:

Student strategies
1. In a four-alternative MC format, never choose the facetious or obviously jargon-ridden alternatives.
2. By elimination, you can usually reduce to a binary choice, with the pig ignorant having a 50% chance of being correct.
3. Does one alternative stimulate a faint glow of recognition in an otherwise unrelieved darkness? Go for it.
4. Longer alternatives are not a bad bet.

Teacher strategies

1 Student strategies are discouraged by a guessing penalty: that is, deducting wrong responses from the total score. (Question: Why should this be counterproductive?)
2 The use of facetious alternatives is patronizing if not offensive (I-can-play-games-with-you-but-you-can't-with-me). Not nice.
3 You can reword existing items when you run out of ideas: it also increases reliability (if you want that sort of reliability: see p. 188).

MCQs allow enormous coverage (that 'enemy of understanding', Gardner 1993). One hundred items can cover a huge range of topics. Exclusive use of the MCQ greatly misleads as to the nature of knowledge, because the method of scoring makes the idea contained in any one item the same value as that in any other item (see Box 10.2).

The message is clear. Get a nodding acquaintance with as many details as you can, but do not be so foolish as to waste your time by attempting to learn anything in depth.

MCQs can be useful as a minor supplement to other forms of assessment and for quick quizzes. Eric Mazur used them as a TLA, publicly displaying the range of responses and getting their students to discuss them (p. 111). Their potential for wide coverage means items can address anything dealt with in class: they are therefore useful in encouraging class attendance.

When used exclusively, however, they send all the wrong signals.

Box 10.2   What do you remember of Thomas Jefferson?

An MCQ was given to fifth-grade children on the 200th anniversary of the signing of the US Constitution. The only item on the test referring to Thomas Jefferson was: 'Who was the signer of the Constitution who had six children?' A year later, Lohman asked a child in this class what she remembered of Thomas Jefferson. She remembered that he was the one with six children, nothing of his role in the Constitution.
What else did this girl learn?

There is no need to separate main ideas from details; all are worth one point. And there is no need to assemble these ideas into a coherent summary or to integrate them with anything else because that is not required.

Source: Lohman (1993: 19)


Ordered-outcome items

An ordered-outcome item looks like an item from an MCQ, but instead of opting for the one correct alternative out of the four or so provided, the student is required to attempt all sub-items (Masters 1987). The sub-items

are ordered into a hierarchy of complexity that reflects successive stages of learning that concept or skill. The students ascend the sequence as far as they can, thus indicating their level of competence in that topic.

The stem provides sufficient information for a range of questions of increasing complexity to be asked. In the given example, devised by one of the authors (CT), the SOLO taxonomy was used as a guide to the levels of complexity: (a) is declarative unistructural, (b) and (c) are increasingly complex declarative relational and (d) addresses functioning knowledge at a relational level. The levels do not need to correspond to each SOLO level or to SOLO levels at all; here, SOLO is simply a way of helping structure increasingly high level responses that *make sense* in the particular context.

Key situations can be displayed in this format and a (d) or (c) level of performance required (in the example in Box 10.3, anything less would not be of much help to patients).

Box 10.3   An ordered-outcome item for physiotherapy students

Severity of asthma

6 am   12 md   6 pm   12 mn   6 am

Diurnal variations in symptoms of asthma
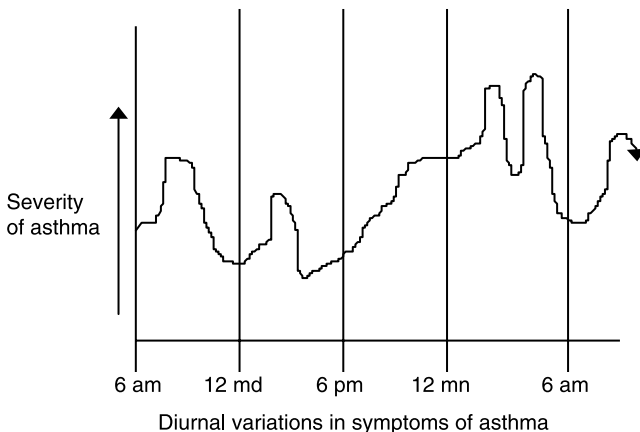
a When is the asthma attack most severe during the day?
b Is an asthmatic patient physically fitter at 1 pm or 8 pm?
c Do you expect an asthmatic patient to sleep well at night? Give your reasons.
d Advise an asthmatic patient how to cope with diurnal variation in symptoms.

A guide to constructing ordered-outcomes items, using a SOLO sequence, follows:

a *Unistructural*: Use one obvious piece of information coming directly from the stem. Verbs: 'identify', 'recognize'.

b *Multistructural*: Use two or more discrete and separate pieces of information contained in the stem. Verbs: 'list' and, in this example, 'compare', which is nearer relational.

c *Relational*: Use two or more pieces of information each directly related to an integrated understanding of the information in the stem. Verbs: 'interpret', 'apply'.

d *Extended abstract*: Use an abstract general principle or hypothesis that can be derived from, or suggested by, the information in the stem. It is sometimes possible to use a one-correct-answer format ('Formulate the general case of which the preceding (relational) item is an instance') or to use a divergent short-answer sub-item ('Give an example where (c) – the preceding item – does *not* occur. Why doesn't it?'). Verbs: 'hypothesize', 'design', 'create' (not in Box 10.3 example).

An example from chemistry is given in Box 10.4.

Box 10.4   A chemistry ordered-outcome item

In a space shuttle, the exhaled air from an astronaut is circulated through lithium hydroxide filters to remove carbon dioxide according to the following equation:

$$2LiOH(s) + CO_2(g) \rightarrow Li_2CO_3(s) + H_2O(l)$$
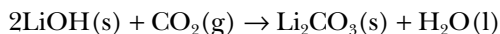
(Relative atomic masses: H = 1.0, Li = 6.9, C = 12.0, O = 16.0, K = 39.0; molar volume of a gas at the temperature and pressure of the space shuttle = 24 dm^3).

a State whether the lithium hydroxide in the filters is in the form of a solid, liquid or gas.

b How much greater is the relative molecular mass of carbon dioxide compared to that of lithium hydroxide?

c Calculate the volume of carbon dioxide that could be absorbed by 1gm of lithium hydroxide.

d Suggest how the spent lithium hydroxide in the filters can be conveniently regenerated after use.

[Solubility data: LiOH (slightly soluble), NaOH (soluble), Li$_2$CO$_3$ (insoluble)]

Source: Holbrook (1996)

In the ordered-outcome item, we are seeing what ILOs, applying to a single situation, a student can meet. The ordered-outcome format sends a strong message to students that higher is better: recognition and simple algorithms won't do. Using this format with mathematics items, Wong (1994) found students operated from theory rather than applying algorithms, while Lake (1999) found an ordered-outcome format in biological sciences led

students from the basic skills of data retrieval to the advanced skills of critical analysis.

Using the evidence from ordered-outcome items raises the interesting question of what are we assessing: how well the student meets the ILO, or how well the student performs the task? If the former, then the evidence is there immediately according to what levels the student was able to pass. If the latter, we need to be very careful in constructing ordered-outcome items so that we can achieve one final score at the end. The items need to form a staircase: unistructural items must be easier than multi-; multi- easier than relational; relational easier than extended abstract. This can be tested with trial runs, preferably using the Guttman (1941) scalogram model, or software is available (Masters 1988). Hattie and Purdie (1998) discuss a range of measurement issues involved in the construction and interpretation of ordered-outcome SOLO items.

In scoring ordered-outcome items as a normal test, it is tempting to say (a) gets 1 mark if passed, (b) 2 marks, (c) 3 marks and (d) (let's be generous) 5 marks. We then throw the marks into the pot with all the other test results. While this is convenient, it misleads as to a student's level of understanding. If the score is less than perfect, a nominal understanding of one level could be averaged with a high understanding of another, yielding 'moderate' understanding across all levels, which was not the case at all.

Alternatively, we could say that as the items are for all practical purposes perfectly ordered, the final score is the highest level addressed, as all the preceding levels may be presumed to have been passed.

For those who are interested to try out some ordered-outcome items, you can complete Task 10.1.

This discussion of ordered-outcome items has raised two major issues:

1 Do we assess how well each ILO has been addressed or how well the task has been performed?
2 Do we assess quantitatively or qualitatively?

Let us turn to these two questions.

Assessing the task

Do you assess and grade the ILO or the task? The obvious answer in outcomes-based teaching and learning is that you assess how well each ILO has been addressed. But that is not what teachers are used to doing or what students are used to receiving as assessment results. Teachers assess the work that students do, the tasks they perform, whether they are exam questions, lab reports, assignments, final-year projects or whatever. Students for their part want to know how well they did in the exam, in their lab report, in their assignment or in their final-year project.

When each ILO is assessed by only one assessment task, there is no problem: assessing the task and assessing the ILO amount to the same thing. It is

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Task 10.1   Writing ordered-outcome items

Try the following steps to write some ordered-outcome items for your course.

1 Identify the content area and the ILOs that you expect your students to achieve with that content area.

Content area: _____

ILOs : _____
_____
_____
_____

2 Design the stem to provide adequate information for the students to answer the range of questions. The stem could be in the form of written information, a diagram, a chart or any other form of presentation.
_____
_____
_____

3 Now design four or five questions that the students need to answer based on the information given in the stem. These questions should be of increasing complexity of the ILOs. Double-check if the answers to the questions do reflect the successive stages of learning of the concept or skill as indicated in the ILOs.
_____
_____
_____
_____
_____

4 Now decide how you are going to score the items.

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only when there are several tasks that might address one ILO or when one task addresses several ILOs that the question arises. Sometimes the task itself is so important that it is an ILO. 'Write a laboratory report' is an example: keeping proper records of laboratory procedures is an intended outcome in itself. Usually, however, assessment tasks are a means, not an end: 'pass the examination' is not an intended learning outcome in itself but a means by which we can assess whether particular learnings have occurred or not.

It could be argued that since the assessment tasks have been aligned to one or more ILOs, that is good enough: alignment is present and so we assess the task, as we have always done. However, where there is more than one task

relevant to any given ILO, we would not then know what contribution each task made to that ILO; and where one task addresses several ILOs, assessing the task doesn't give much idea of how well a student has met any particular ILO.

Several positions may be taken:

1 The task is assessed quantitatively, or 'marked', in the traditional way; that is, ratings or percentages are given in the way they always have been. Some teachers feel that this is already adequate for their particular subjects and will continue to assess this way, Chapter 9 notwithstanding. This is a minimally acceptable position, as alignment is present.
2 The task is assessed qualitatively by using rubrics (see Table 10.2), and converted to percentage points for obtaining the final grade for a task or for a course.
3 The task is assessed holistically and graded directly.

Point 1 is standard practice, and nothing further need be said about that. We do, however, need to say more about points 2 and 3.

Assessing qualitatively but reporting quantitatively

Table 10.2 gives an example of point 2, assessing qualitatively and converting to a quantitative scale, for an assignment in which a case is argued, evidence for and against is marshalled, a conclusion is reached and a letter grade from F to A is to be given.

You may notice that the general structure from D to A is in terms of SOLO as applied to the four components of introduction, argument, conclusions and references. Each component is assigned a range of points or marks, weighted so that the argument, the most important component, is allocated most points. Note that the gap between grades is greater than the gap between levels within grades, to emphasize that achieving a grade is more important than achieving a fine grade within grades. Thus, a grade is first awarded according to the rubrics, after which the conversion to a number is made. The task, in other words, is graded, not 'marked'; the conversion to marks is only for administrative purposes. (And notice: we used the term 'points', not 'marks'.)

For example, let us say the introduction in one case describes the topic, refers to past work with some passing evaluation of it but then goes on to state the present case, with no logical progression to the topic. This meets the C criteria, hinting at a B−, so let us say C+, or seven points. Each component is then assessed in this way and totalled. Table 10.3 (p. 211) gives a range of percentage points for a letter grade.

Say a student scored 67 for this assessment task. This is closest to a B (Table 10.3), so B it is. The second row in Table 10.3 is for arriving at the final GPA for a student for the year. The mean percentage points over all courses is calculated and converted to a typical GPA-type scale. All this is fairly arbitrary, but then using numbers in this way always is. Numbers just happen to

Table 10.2 Grading criteria (rubrics) for an argue-a-case assignment

	Percentage points	D *1–3*	C– C C+ *5–7*	B– B B+ *9–11*	A– A A+ *13–15*
Introduction	15	Gives enough to tell what the topic is but little prioritizing	Describes topic, refers to past work, what is proposed to do here	As in C, but shows what past work has done/not done; logical progression to topic	Interesting and complex account of why this topic, what questions need to be addressed, foretaste of original contribution
Argument	50	Some relevant points in descriptive lists, mainly either pro or con	More relevant points drawn from literature, lists both pros and cons, but has difficulty in making a convincing case	Most/all relevant points from mainstream literature; uses appropriate structure to resolve issues in convincing argument	As in B, but makes an original case in own voice, well supported by resources/references going well beyond the mainstream literature
		5–20	24–28	32–38	42–50
Summary and conclusions	20	Summary is a list of either pros or cons leading to a lopsided conclusion	Summary recognizes differences but unable to resolve them, weak conclusion or jumps to conclusion	Summary is balanced leading to well-reasoned conclusion	Summary leads to a surprise or original conclusion generating new issues
		2–4	7–10	13–17	18–20
References	15	Sparse; little evidence of library skills Incorrect formatting	Evidence of some search skills Standard references in mostly correct formatting	Comprehensive, showing care in researching the issue, format correct and clear	As in B, but uses unusual references to bolster an original argument Formatting as in B
		1–3	5–7	9–11	13–15

Table 10.3   Conversions between percentage points, letter grades and GPA

Fail	D	C–	C	C+	B–	B	B+	A–	A	A+
> 45	46–50	52	55	60	65	68	70	75	80	80+
For GPA	1.0	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	4.3

be very convenient for determining final results over a number of tasks or a number of courses.

Holistic grading

Now let us look at the alternative: holistic grading of the task. The argument is that assessment tasks are best assessed as a whole, not as a set of components. The unique benefit of the essay assignment, for example, is to see if students can construct their response to a question or issue within the framework set by the question. The point of the essay is to see how appropriately structured the response is. But there are traps for the unwary teacher. Using an analytic marking scheme, it is very hard not to award high marks, when in fact the student hasn't even addressed the question (see Box 10.5).

Box 10.5   A warning from an ancient history essay

Question: In what ways were the reigns of Tutenkhmen and Akhnaton alike and in what ways were they different?

The student who obtained the highest marks in the class listed the life histories of both pharoahs and was commended by the teacher for her effort and depth of research. But her lists didn't answer the question, which required a compare-and-contrast structure.

Source: Biggs (1987b)

The ancient history teacher failed to distinguish between 'knowledge telling' and 'reflective writing' (Bereiter and Scardamalia 1987). Knowledge telling is a multistructural strategy that can all too easily mislead those assessing the essay. Students tell all they know about the topic content by listing in a point-by-point form. When marking bottom-up, as is so often done by tutors using a common template for a marking scheme, it is very hard not to award high marks for knowledge telling when in fact the student hasn't properly addressed the question.

Reflective writing, on the other hand, transforms the writer's thinking. The novelist E.M. Forster put it thus: 'How can I know what I think until I see what I say?' The act of writing externalizes thought, making it possible to unleash a learning process. By reflecting on what is written, it can be revised

in so many ways, creating something quite new, even to the writer. That is what the best academic writing does.

Reflective writing is clearly what the essay should be used for, not knowledge telling. Tynjala (1998) suggests that writing tasks should require students to transform their knowledge actively, not simply to repeat it. The writing should require students to undertake open-ended activities that make use of existing knowledge and beliefs, that lead them to question and reflect on that knowledge and to theorize about their experiences and to apply theory to practical situations, and/or to solve practical problems or problems of understanding. Tynjala gave students such writing tasks, which they discussed in groups. When compared with students who did not do these tasks, the reflective writers had the same level of knowledge as the other students but were far better than the latter in the *use* to which they could put their thinking.

Assessing the discourse structure of the essay requires a framework within which that structure can be judged. SOLO helps in making that judgment. Listing, describing, narrating are multistructural structures; compare and contrast, causal explanation, interpretation, and here, arguing a case, are relational. Inventive students create their own structures, which when they work can make original contributions: these are extended abstract. The facts and details play their role in these structures in like manner to the characters in a play. And the play's the thing. You do not ignore details, but ask of them:

- Do they make a coherent structure (not necessarily the one you had in mind)? If yes, the essay is at least relational.
- Is the structure the writer uses appropriate or not? If yes, then the question has been properly addressed (relational). If no, you will have to decide how far short of satisfactory it is.
- Does the writer's structure open out new ways of looking at the issue? If yes, the essay is extended abstract.

If the answer is consistently 'no' to all of these questions, the essay is multistructural or less and should not be rated highly, no matter how rich the detail. If you want students to 'identify' or 'list', the short answer or MCQ are more appropriate formats, as easier for the student to complete and for the teacher to assess. It may be appropriate to award the grades on this basis: D (bare multistructural), C– to C+ (increasingly better multistructural, hints of relational), B– to B+ (relational), A– to A+ (extended abstract). Each grade is qualitatively different from the next, but within each grade, one can use the '+' and '–' modifiers for a bare C or an excellent C. Table 10.3 (p. 211) can be used to convert the letter grade to a number for collating purposes and for calculating GPA.

The essay assignment can be a powerful tool for learning as well as an assessment task. If it is not used for the purpose of reflective writing, thus addressing ILOs with higher relational and extended abstract verbs, it is simpler to use a listing format.

Assessing the intended learning outcome

The alternative to assessing the task is to use the evidence supplied by the assessment tasks to assess each student's performance with respect to each ILO. The argument here is that since the ILOs are statements of what the student is intended to learn, it makes most sense to report the results of the assessments in terms of the ILOs for each course rather than for the assessment tasks themselves. Again, if there is only one AT per ILO, there is no issue, but where there are several the question becomes: 'What does the available evidence say about this student's performance on the ILO in question?'

Having said that, it is not, of course, a good idea to multiply assessment tasks – we need to watch both our workload and the students' – but frequently an AT that is set primarily to address a particular ILO often has something to say about a student's performance on another ILO. For example, a common verb like 'explain' a particular concept or 'be able to communicate' may be evidenced in an examination and again in an assignment. Do we ignore the evidence from a secondary AT or do we incorporate it in our assessment of how well the student has met the ILO?

Assessing by ILO cannot meaningfully be performed quantitatively, that is by 'marking' the ILO. It is a question of what the evidence from the assessment tasks says about how well the ILO has been achieved by a given student, which has to be a matter of *judgment*. In order to keep our own judgments stable, and in order to obtain maximum reliability between teachers making these judgments, rubrics need to be spelled out clearly. Table 10.4 gives a sample set of rubrics for the verb 'explain' although, of course, these will need to be adjusted according to what is being explained and in what context.

Here, we moved straight from whatever evidence is available to making a graded judgment of how well the student addresses the ILO itself. This could be used as formative feedback to the student or summatively. If the latter, as this is only one ILO out of five or so for a given course, we will need to state a final grade for that course and to calculate a student's GPA. The 'scale score' is actually taken from one university's conversion from grade to GPA-type scale: notice that again as in Table 10.2 (p. 210), the gap between grades is greater than the gap within grades in terms of scale score. When the final result has been calculated, we can convert to GPA score using Table 10.3 (p. 211), as before. It would in fact be most meaningful if on the student's transcript all the assessments of all the course ILOs were retained rather than overall GPA.

In practice, students at present want to know 'How did I do on that midterm assignment?' rather than 'How did I do on the "explain" ILO?' To some extent, then, it will be necessary to assess both the task itself to give student feedback, as well as the ILOs it may address. In time, however, when students and the public generally become used to outcomes-based teaching and learning it may well be that a profile of grades on the ILOs will become perfectly meaningful to all.

Table 10.4 Example of criteria (rubrics) for grading an ILO

	Marginal	Adequate			Good			Excellent		
Scale score	D 1.0	C– 1.7	C 2.0	C+ 2.3	B– 2.7	B 3.0	B+ 3.3	A– 3.7	A 4.0	A+ 4.3
ILO Explain	Able to identify and briefly write about limited points Very little evidence of using these points to provide reasoning to why they are interrelated	Able to identify a number of relevant points with some details Use these points to provide a fair reasoning or causality No evidence of a comprehensive overview of reasoning or causality			Able to identify a full range of relevant points with details Supported by relevant literature Points are organized to provide a comprehensive and cohesive reasoning or causality			As in 'good' but provides views on possible alternative causes and/or results depending on changes of conditions Able to link current reasoning to situations in real-life professional contexts		

Before we end this chapter, Task 10.2 is an exercise on designing assessment tasks for declarative knowledge of your course.

Task 10.2   Design an assessment task or tasks for one of your course ILOs

Select one ILO relating to declarative knowledge of your course and design assessment task(s) that will appropriately assess this ILO. To help you check the alignment between the task(s) and the ILO, identify what the students are required to do in order to complete the assessment task(s). The task requirements should be aligned to the ILO.

Course ILO: _____

Number of students in the course:

Assessment task	Student activities to complete the task
1	
2	

Now double-check if the student activities are aligned to the verb(s) nominated in the respective course ILO.

After designing the task(s), you will need to write the grading criteria for either the ILO or for each of the tasks.

Summary and conclusions

Designing assessment tasks

In designing assessment tasks there are several things to bear in mind. Clear assessment criteria or rubrics need to be established for each task or for the ILO(s) each AT is meant to address. It is useful to think of ATs as a *source of evidence* of a student's achievement of any ILO. You can have one source of evidence or several, just as one task may provide evidence on more than one ILO, but the ATs have to be *manageable,* both by students in terms of both time and resources in performing them and by staff in assessing students' performances.

Assessing declarative knowledge

Declarative knowledge is typically assessed by writing answers to set questions or in objective formats. Writing is either in the timed and invigilated 'exam' or unrestricted, as in the typical essay assignment. The stress typically felt

in the 'exam' situation produces its own distortion in the quality of work done, especially by the Roberts of this world. A particular problem with assessing extended writing is the lack of reliability between assessors. Several suggestions are made to improve this.

Objective formats of assessment

The lack of reliability of assessing essays, plus the time they take to assess, has led many teachers to use objective formats, particularly the MCQ. The major problem with the MCQ, however, is that it is not at all suited to addressing high-level outcomes and that it is prone to encouraging 'strategic' rather than knowledge-driven preparation strategies. An exception is the ordered-outcome format, which encourages students to target higher rather than lower level items.

Assessing the task

Once the AT is aligned to the ILO(s) it is meant to address, the question becomes how, operationally, is the student's performance assessed? Is it assessed against the task or against the ILO(s) the task is meant to address? Teachers and students are used to task assessment and that is what many teachers will continue to do. There are three ways of task assessment: quantitatively, as has been the case traditionally; by assessing the task analytically, addressing the task components using rubrics for each component; or by assessing the task as a whole and grading qualitatively.

Assessing the ILO

The most logical, and operationally the simplest, way of assessing is by using the evidence gained from the various tasks directly to assess the ILO itself, by using rubrics designed for each ILO. The main objection to this method is simply that teachers and students are not yet used to it.

Further reading

Much of the background and enrichment material for this chapter is the same as for the next. Please refer to Chapter 11's further reading section.

11

Assessing and grading functioning knowledge

We now look at aligning assessment tasks to ILOs that address functioning knowledge, and at how they may be graded. Functioning knowledge has particular relevance to professionally related programmes, the assessment of which includes assessing for ILOs for professional problem solving, for creativity and, up to a point, for lifelong learning. We look at a range of assessment formats with special reference to portfolios and capstone projects as these formats allow students to display the full range of their personal learning. Assessment in large classes restricts the range of formats that are practicable, but there are better ways of assessing both declarative and functioning knowledge than cramming large numbers of students into examination halls and relying heavily on MCQs. One of the reasons for invigilating students during assessment is not on grounds of good assessment but to prevent plagiarism. Plagiarism is of increasing concern in today's universities for a variety of reasons. We look at some of the issues here and how plagiarism may be minimized.

Formats for assessing functioning knowledge

Assessing functioning knowledge is in principle much easier than assessing declarative knowledge. Just look at these verbs: 'apply', 'design', 'create', 'solve unseen problem', 'perform a case study', 'reflect and improve' and many others that put knowledge to work. These verbs work as performances of understanding in a context, and in professional faculties, that context is about dealing with real-life professional problems. The assessment in these cases is much more direct than when assessing decontextualized declarative knowledge. How well do the students carry out a case study? Get them to carry out a case study and see how well they do it. How well do the students design a piece of systems software? Get them to design a piece of software and see how well they do it.

Such tasks are, as in real life, often divergent, ill formed or 'fuzzy', in the sense that there are no single correct answers. For example, there are many acceptable ways a software program could be written for use in a real estate office. 'Real life' imposes limitations relating to budget, the costs of a range of materials, time and space and so on, that allow different alternatives. Assessment involves how well the design or creation works within those limitations. What is important is that the student shows a 'real-life' understanding of the situation: how the problem may reasonably be approached, how resources and data are used, how previously taught material is used, how effectively the solution meets likely contingencies and so on. Clearly, this needs open-ended assessment, where students are free to structure their performances as they best see fit.

Various formats may be used for assessing and grading functioning knowledge in terms either of the ILOs addressed or the task itself. As in the case of declarative knowledge, it is a matter of whether the rubrics apply to the task, to the ILO, or to both.

Presentations

Student presentations

As opposed to the traditional seminar, student presentations are best for functioning rather than declarative knowledge. Peer input can be highly appropriate in this case. In one fine arts department, students present a portfolio of their best work to an examining panel that comprises teachers, a prominent local artist and a student (rotating), who view all the student productions. The works are discussed and a final, public, examiners' report is submitted. This is not only a very close approximation to real life in the gallery world, but actively involves staff and students in a way that is rich with learning opportunities.

Poster presentations

Poster presentations also follow a real-life scenario: the conference format. A student, or group of students, displays their work, according to an arranged format, in a departmental or faculty poster session. This provides excellent opportunities for peer-assessment and for fast feedback of results. Poster assessment was introduced as an additional element of the assessment of final-year project in an optometry programme to facilitate and assess reflection and creativity (Cho 2007). Apart from teacher assessing the posters, self- and peer-assessment were also used. To motivate students to do well in the poster assessment, opportunity was given to present the students' posters at a regional conference and a cash reward was awarded to the best poster. Student feedback shows that designing the posters was fun and helped them to be more creative and reflective of what they were doing in the project. The experience of self- and peer-assessment also helped them learn from an assessor's perspective. However, posters 'must be meticulously prepared'

(Brown and Knight 1994: 78). The specifications need to be very clear, down to the size of the display and how to use back-up materials: diagrams, flow-charts, photographs. Text needs to be clear and highly condensed. Assessment criteria can be placed on an assessment sheet, which all students receive to rate all other posters. Criteria would include substance, originality, impact and so on.

Critical incidents

Asking students to keep records of critical incidents in their workplace experience and later to discuss their significance can be very powerful evidence of how well their knowledge is functioning. They might explain why these incidents are critical, how they arose and what might be done about it. This gives rich information about how students (a) have interpreted what they have been taught and (b) can make use of the information.

Such incidents might be the focus of an assessment interview, of a reflective journal or be used as portfolio items (see later).

Individual and group projects

Whereas an assignment usually focuses on declarative knowledge, the project focuses on functioning knowledge applied to a hands-on piece of research. Projects can vary from simple to sophisticated or carried out individually or by a group of students.

Group projects are becoming increasingly common for two major reasons: they aim to teach students cooperative skills, in line with ILOs or graduate attributes relating to teamwork; and the teacher's assessment load is markedly decreased. They are not, however, always popular with students: they often find it difficult to coordinate times; the assessment may not take into account individual contributions, on the one hand, or group processes, on the other; workplace cooperation involves individuals with distinct roles and they may not be assessed individually on their contribution (Morris 2001). The common practice of simply awarding an overall grade for the outcome, which each student receives, fails on all counts.

Group projects need to be used carefully. Peer evaluation of contribution is certainly one way to make them more acceptable, but giving that a miserly 5% towards the final grade is not enough to overcome the problem, as one student, quoted in Morris (2001), put it. Lejk and Wyvill (2001a, 2001b) have carried out a series of studies on assessing group projects, this question of assessing contribution of members being one aspect. They found that self-assessment was not very effective and suggest that the fairest way is to use peer-assessment following an open discussion between students about relative contributions – but the peer-assessment should be conducted in secret, not openly.

Most attempts to assess relative contribution use quantification. A simple version might be to award a global 60%, say, to a particular project. If there are four participants, this means that 240 marks need to be allocated. You may make this allocation, on the basis of interviews with the students, or get them to do it. One problem is that they may decide to divide them equally – some hating themselves as they do so, knowing they are selling themselves short. Lejk and Wyvill use an elaborate matrix where students rate each other on aspects of the task and derive an index for each student, which is used to weight the calculation of the grade of each. The reliability of peer-assessment in assessing group projects is an interesting and neglected issue that is handled by Magin (2001).

A problem with collaborative projects is that individual students too easily focus only on their own specific task, not really understanding the other components or how they contribute to the project as a whole. The idea of a group project is that a complex and worthwhile task can be made manageable, each student taking a section they can handle. However, the tasks should not be divided according to what students are already good at: Mario has read widely, so let him prepare the literature review, Sheila is good at stats so let her do the analysis of results. The problem with this is that little *learning* may take place. We want students to learn things other than what they already know, so a better allocation is that Sheila does the literature review and Mario the stats. This is likely to end up with both helping one another and then everyone learns with some peer teaching thrown in to boot.

Most important, we want the students to know what the whole project is about and how each contribution fits in. To ensure this, an additional holistic assessment is necessary. Students might be required to submit a reflective report, explaining where and how their contribution fits into the project as a whole and explaining how they think they have achieved the ILOs through their participation in the project.

Learning contracts

Contracts replicate a common everyday situation. A learning contract would take into account where an individual is at the beginning of the course, what relevant attainments are possessed already, what work or other experience and then, within the context of the course ILOs, he or she is to produce a needs analysis from which a contract is negotiated: what is to be done and how it is proposed to do it and how it is to be assessed. Individuals, or homogeneous groups of students, would have a tutor to consult throughout and with whom they would have to agree that the contract is met in due course. The assessment problem hasn't gone away, but the advantage is that the assessments are tied down very firmly from the start and the students know where they stand (Stephenson and Laycock 1993).

A more conventional and less complicated learning contract is little

different from clear criterion referencing: 'This is what an A requires. If you can prove to me that you can demonstrate those qualities in your learning, then an A is what you will get.' This is basically what is involved in portfolio assessment (see later).

Reflective journal

In professional programmes in particular, it is useful if students keep a reflective journal, in which they record any incidents or thoughts that help them reflect on the content of the course or programme. Such reflection is basic to proper professional functioning. The reflective journal is especially useful for assessing ILOs relating to the application of content knowledge, professional judgment and reflection on past decisions and problem solving with a view to improving them. One teacher told us she had tried journals but found them useless, because the students wrote what was in effect a diary of routine events – which is *not* what a reflective journal should contain. One needs to be very clear about what course or programme ILOs the journals are meant to be addressing. In a course of contact lens clinic in one of the universities in Hong Kong, reflective writing was used as one of the components of assessment to encourage and assess students' reflection during their clinical placement (Cho and Tang 2007). Students were asked to keep reflective diaries on their learning experience from clinical cases, interaction with and feedback from supervisors and peers and application of theory to practice. Students were briefed on this new form of assessment and were also involved in giving suggestions on the design and assessment weighting of reflective diaries. Quantitative and qualitative feedback from students indicated that students found that they learned more because of the reflective component of the assessment, their learning experience was sharpened through the reflective writing. They were motivated to communicate more frequently with their supervisors and peers to critique their own practice and also the application of theory to practice.

Assessing journals can be delicate, as they often contain personal content. For assessment purposes it is a good idea to ask students to submit selections, possibly focusing on critical incidents. Journals should not be 'marked' as a task, but taken as sources of evidence for the ILOs in question, especially useful for the verb 'reflect' to see if the students are able realistically to evaluate their own learning and thinking in terms of course content.

One of the authors used reflective diaries to assess transformative reflection applied to teaching in an inservice masters of education course for tertiary teachers (Tang 2000). As one of the learning activities, students were asked to keep a reflective diary of their learning for every session of the course. They were required to select and include two such diaries as part of their assessment portfolio. Feedback from the students showed that the diaries were a useful tool for transformative reflection, providing them with

opportunities to search for and express their learning in a personal way and to relate and apply their learning to their own teaching.

Case study

In some disciplines, a case study is an ideal way of seeing how students can apply their knowledge and professional skills. It could be written up as a project or as an item for a portfolio. Case studies might need to be highly formal and carried out under supervision or be carried out independently by the student. Possibilities are endless.

Assessing the case study is essentially holistic, but aspects can be used both for formative feedback and for summative assessment. For example, there are essential skills in some cases that must be got right, otherwise the patient dies, the bridge collapses or other mayhem ensues. The component skills here could be pass–fail; fail one, fail the lot (with latitude according to the skill and case study in question). Having passed the components, however, the student then has to handle the case itself appropriately and that should be assessed holistically.

Portfolio assessment

Portfolios have long been used in the art world and in job applications: individuals place their best work in a portfolio for judgment. They also need to be wisely selective: dumping in items that do not address the job specifications and qualifications will not impress. Just so, students need to be wisely selective in placing in their portfolios what they think best addresses the ILOs and why. Portfolios allow the student to present and explain his or her best 'learning treasures' and are therefore ideal for assessing unintended outcomes (pp. 185–6). When students give their creativity free rein, portfolios are full of complex and divergent surprises, aligned to the course or programme ILOs in ways that are simply not anticipated by the teacher.

In their explanations for their selection of items, students explain how the evidence they have in their portfolios addresses the course ILOs or indeed their own personal intended aims and outcomes of learning. One danger with portfolios is that students may go overboard, creating excessive workload both for themselves and for the teacher. Limits must be set (see later).

Assessing portfolio items can be deeply interesting. It may be time consuming, but that depends on the nature and number of items. Many items, such as concept maps, can be assessed in a minute or so. In any event, a whole day spent assessing portfolios is existentially preferable to an hour of assessing lookalike assignments.

Following are some suggestions for implementing portfolio assessment:

1 *Make it quite clear in the ILOs what the evidence for good learning may be.* The ILOs to be addressed should be available to the students at the beginning of the semester and discussed with them.

2 *State the requirements for the portfolio:*

- *Number of items.* This depends on the scope of the portfolio, whether it is for assessing one course or several and the size of the items. Four items is about the limit in a semester-long course but that is flexible.
- *Approximate size of each item.* Some items, such as a reflective essay, may reach 2000 words or more, while other items, such as concept maps or other diagrams, require less than a page. A rule of thumb: the total portfolio should not be much longer than a normal project or assignment.
- *A list of sample items* is most helpful when the students are new to portfolios (see Box 11.1) but they should be strongly discouraged from using that list only. Students should show some creativity by going outside the list.
- *Any compulsory items?* This depends on the nature of the course. In most professional courses, a reflective journal is probably a good basis even if only extracts are submitted in the end.
- *Source of items.* Items may be specific to a course or drawn from other courses in the case of evaluating a programme. In some problem-based courses, students will be continually providing inputs, often on a pass–fail basis, over a year, or two years. The final evaluation could then comprise – *in toto* or in part – samples of the best work students think they have done to date.

Box 11.1   Sample items that went into an assessment portfolio in a course for teachers

- Critical incidents from a reflective diary
- Lesson plans, constructed on principles dealt with in class
- Teaching checklists on how teachers may (unconsciously) encourage surface approaches in students as rated by a colleague
- A videotaped peer discussion on teaching with each participant writing up his/her perspective
- Accounts of exemplary teaching/learning experiences and the lessons to be drawn
- Concept maps of the course
- Letter-to-a-friend about the course
- Reviews of articles, self-set essays, to address the declarative ILOs
- A questionnaire on motivation and self-concept

Source: Biggs (1996)

- *Grading the portfolio.* Portfolios are best assessed as a whole (the 'package'), not by marking individual items.

On this last point, if items are graded separately and averaged, the main value of the portfolio is lost: the situation is the same as combining different assessments in the usual way to arrive at a final grade (see p. 209). While each item might address one or more different ILOs, the whole addresses the thrust of the course. The student's selection of items is in effect saying: '*This* is what I got out of your class. I have learned these things, and as a result my thinking has changed in the following ways.' If their package can show that, they have learned well indeed.

Box 11.2 gives a concrete example from a course for educational psychologists at a Hong Kong university; Table 11.1 gives general guidelines for grading a portfolio.

Box 11.2   An example of assessing and grading a portfolio holistically

Curriculum and instruction: A subject in a course for educational psychologists

Grading will be based on your attaining the following ILOs:

1 Apply the principles of good teaching and assessment to chosen contexts.
2 Relate selected aspects of curriculum design and management to the educational system in Hong Kong.
3 Apply the content and experiences in this subject to enhance your effectiveness as an educational psychologist.
4 Show examples of your reflective decision making as an educational psychologist.

Final grades will depend on how well you can demonstrate that you have met all the ILOs (only grades A, B, C and F were awarded):

A Awarded if you have clearly met all the ILOs, provide evidence of original and creative thinking, perhaps going beyond established practice.
B Awarded when all ILOs have been met very well and effectively.
C Awarded when the ILOs have been addressed satisfactorily or where the evidence is strong in some ILOs, weaker but acceptable in others.
F Less than C, work plagiarized, not submitted.

Assessment guidelines

Show evidence that you have learned according to the criteria in the ILOs. Keep a *reflective journal* to record useful insights as you progress through the course. Use as a database. The evidence will be presented in the following forms:

- A *paper*, drawing on principles of curriculum and good teaching, explaining how you would like to see the Hong Kong educational system implement any major educational reforms. You should have ILO (2) in mind.
- A *report* specifically addressing ILOs (3) and (4), a review of those aspects of the course that you think will probably enhance your work as an EP. This can refer both to your way of thinking about your role, as much as to actual skills. Your reflective journal will be an important source for this.
- Your *own rationale* of your group presentation, taking into account the evaluation made at the time of presentation. You should have ILO (1) in mind.
- A *self-evaluation* showing how you have addressed each of the ILOs.

Place these in a portfolio, which will be graded as above. Take 5000 words as a guideline for the complete portfolio.

Handout for students in a masters course for
educational psychologists

Table 11.1 Holistic grading of a portfolio of items

Marginal	*Adequate*			*Good*			*Excellent*		
D	*C–*	*C*	*C+*	*B–*	*B*	*B+*	*A–*	*A*	*A+*
1.0	*1.7*	*2.0*	*2.3*	*2.7*	*3.0*	*3.3*	*3.7*	*4.0*	*4.3*

Marginal	Adequate	Good	Excellent
The pieces of evidence are relevant and accurate, but are isolated, addressing one aspect of the course Demonstration of understanding in a minimally acceptable way Poor coverage, no originality, weak justification of portfolio items	The evidence is relevant, accurate and covers several aspects of the course Little evidence of an overall view of the course Demonstrates declarative understanding of a reasonable amount of content Able to discuss content meaningfully Good coverage but little application or integration Fair justification of items	The evidence presents a good appreciation of the general thrust of the course Good coverage with relevant and accurate support A clear view of how various aspects of the course integrate to form a thrust or purpose Good evidence of application of course content to practice Portfolio items well justified	As in 'good' but with higher degree of originality and evidence of internalization into personalized model of practice Good evidence of reflection on own performance based on theory Generalizes course content to new and unfamiliar real-life contexts

Notice that the final grade is awarded on the basis of the student's profile on all the ILOs: there is no need for counting and averaging, which greatly simplifies the usual procedure. Because of these points, portfolios are very appropriate for capstone projects (see next section).

For an example of grading a single functional ILO, Table 11.2 presents some rubrics for 'reflect and improve'.

Table 11.2 Grading the ILO 'reflect and improve'

	Marginal *D* *1.0*	*Adequate* *C– C C+* *1.7 2.0 2.3*	*Good* *B– B B+* *2.7 3.0 3.3*	*Excellent* *A– A A+* *3.7 4.0 4.3*
Reflect	Able to use available information to self-evaluate and identify limited aspects of own strengths and weaknesses in a general sense No evidence of suggestions of ways to improve performance No evidence of theory being used in self-evaluation	Able to use available information to self-evaluate and identify more aspects of own strengths and weaknesses in a general sense Little application of theory in self-evaluation and limited suggestions of ways to improve performance	Able to use available information to self-evaluate and identify the full range of own strengths and weaknesses Self-evaluation is based on theory Increasingly able to suggest ways to improve performance in a specific context	As in 'good' Able to generalize self-evaluation to beyond existing context Suggest ways of improving performance in real-life professional contexts

Educational technology has enabled the development of e-portfolios with items involving multimedia presentations.

If you are interested in implementing portfolio assessment, try completing Task 11.1.

Capstone or final year projects

Capstone projects are versions of final year projects with the specific intention of addressing programme ILOs that may not have been assessed in individual courses. It is, in fact, a flaw in much programme design that programme ILOs are often seen in practice if not in intention as no more than the sum of individual course ILOs. However, many programme ILOs, 'to make informed professional decisions' for example, may not be addressed by any particular course ILO, but by a combination of several

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Task 11.1   Design portfolio assessment for functioning knowledge

Have a go at designing portfolio assessment for functioning knowledge for your course by following the following steps:

1 Identify the ILOs relating to functioning knowledge that are to be assessed.
2 Indicate the number of items to be included in the portfolio and the size of each item.
3 Give a list of sample items for students' consideration. However, students should be encouraged to include items outside the list and ones that they think will best evidence their achievement of the course ILOs.
4 Write the grading criteria of the portfolio.

Before you implement the portfolio assessment, discuss with your students so that they clearly understand the rationale, procedural details of the assessment and the grading criteria. It would be helpful if students have access to some samples of portfolios produced by previous students.

ILOs. Many important outcomes – most graduate attributes for example – are not easily teachable in a single semester, but emerge over the years more as a result of 'immersion' than of direct teaching (Knight and Yorke 2004). For this reason, Knight and Yorke recommend that students keep long-term portfolios of their work in which this development may be tracked.

Addressing these broad ILOs, or combinations of ILOs, requires *synoptic* assessment, that is, an assessment that straddles several course ILOs. This is what the capstone project attempts to do. Synoptic assessments enable students to integrate their experiences, providing them with important opportunities to demonstrate their creativity (Jackson 2003). If students' creativity is inhibited by having to address course-specific ILOs throughout their undergraduate career – or if they *feel* it has been inhibited – then they can really let fly in their final year or capstone projects.

The capstone project is thus designed to span several final-year courses or possibly courses over all years, so that students have a chance to show that they can put it all together and use it or, more generally still, to show how they have developed in line with the institution's graduate attributes and of the programme ILOs, which otherwise may never be satisfactorily and holistically assessed. It is particularly well suited to assess those evolving, 'fuzzy' ILOs that are not readily amenable to direct teaching such as lifelong learning and creativity.

Assessing creativity

A deep-seated ambiguity about the nature of creativity and its assessment exists: whether creativity is conceived as generic, applying across contexts, or as embedded in students' chosen *area of specialization*. As when discussing TLAs for creativity, then, we are not assessing here how creative people are, but the creative work that students produce (Elton 2005).

While most teachers in all disciplines believe that it is possible to help students use their creative abilities to better effect, rather fewer think it is possible to assess these capabilities reliably and even fewer are prepared to try and do it. Yet evaluation is critical to the very idea of creativity and creativity is critical in all areas of study.

Let us start with an area where creativity is expected: University College London Slade School BA in Fine Art, Student Handbook 2003/2004 (quoted in Elton 2005). The assessment criteria are as follows:

> You will be assessed on the evidence of ambition, experimentation, innovation and understanding of the subject and its contexts, as developed in the work. Your progress in and development of the following will be taken into account:

- critical awareness;
- relevant use of processes and materials;
- the depth and scope of investigation;
- the ability to realise ideas;
- contribution to and participation in the course.

'Experimentation and innovation' and 'the ability to realise ideas' imply what creativity psychologists like Guilford (1967) and Hudson (1966) refer to as *originality*: the ability to create something different on a foundation of the known. This can take the form of recombining known elements in a new way or seeing connections between ideas that others have missed. 'Critical awareness' is similar to transformative reflection (p. 43): it looks at what is known with a view to seeing what it might become.

These criteria suggest a sequence, starting with a foundation of solid knowledge, prising it open and generating new possibilities, in a SOLO-type progression from relational to extended abstract. Extended abstract verbs are open ended, such as hypothesize, generate, design, reflect and improve: all are built on prior sound knowledge and they require an object and a context relating to that knowledge. Assessing creativity in this way applies to all disciplines, from accounting to zoology and, accordingly, can be built into course or programme ILOs as appropriate. In higher years, such open-ended assessment should be appropriate whatever the area of study.

Two major conditions apply to assessing creativity:

- The assessment tasks have to be open ended. Invigilated examinations are not good formats for displaying creativity, but portfolios, web pages (an e-version of portfolios), blogs, solving 'far' or 'fuzzy' problems, designs,

projects, case studies, posters, narratives, reflective journals offer excellent opportunities for students to display their creativity in thinking about and applying their learning.

- The climate must be such that students are encouraged to take risks, to dare to depart from the established way of doing things. A Theory X climate, with an insistence on students being *right*, discourages creativity.

Assessments in some areas must insist that students do things the established way: surgery, laboratory practice, for example. But when the ILOs address creativity, the assessment tasks must be open ended.

But to continue with our strategy of assessment, what about the rubrics for assessing such outcomes? Isn't asking creative work to be assessed against set criteria something of an oxymoron? Not really, but as Elton (2005) says, the criteria have to be interpreted 'in light of the work'. One aspect of this, he says, is connoisseurship, the ability of experts to asses work in their own field of expertise, the willingness to employ judgment. Balchin (2006) adds to the reliability of judgment by using consensual assessment by several judges.

An important ingredient of creativity is the *originality* of the product and we can estimate that: is it totally surprising and unexpected, is it original-ish but rather ho hum or is it somewhere in between? Another key attribute of genuine creativity is *appropriateness.* Creative work falls within a context. A design that doesn't work, be it ever so 'imaginative', should not receive an A; a hypothesis that is off the wall as far as the research literature is concerned is not likely to be much of a contribution to knowledge. The rubrics will need to address the constraints that have to be met but be open enough to allow students to display their originality. What other specific aspects of a creative work may need to be taken into account in assessment will depend to a large extent on the discipline area.

John Cowan (2006) suggests a rather more radical model for assessing creativity, based on students' self-assessment according to their own conceptions of what creativity means. The assessment by the teachers is not of the student's creativity on the basis of the creative works the student produces, but to 'decide if they are sufficiently persuaded by the learner's making of their judgment to endorse the learner's self-assessment of their own creative processes, thinking and outcomes, made against the learner's chosen and stated criteria, and following the method of judging which the learner has outlined.' (Cowan 2006: 161). To achieve this requires workshopping with students to help them formulate their ideas of creativity and what constitutes the kind of creative works they might produce and how to self-assess it.

Assessing lifelong learning

Lifelong learning is also one of the graduate attributes that can only really be assessed in its embedded form. The summative assessment of lifelong

learning generically will by definition occur rather late in the day for the learner. However, the embedded components of lifelong learning, such as the ability to work independently, to source information selectively, to monitor the quality of one's learning, to reflect transformatively and improve decision making, to use sensible strategies for tackling unseen problems, are assessable in well-designed capstone or independent research projects.

A particular aspect of lifelong learning is workplace learning, of which the *practicum* is a foretaste. The practicum, if properly designed, should call out all the important verbs needed to demonstrate competence in a real-life situation. Examples include practice teaching, interviewing a patient or client in any clinical session, handling an experiment in the laboratory, producing an artistic product. It should be quite clear that the student has to perform certain behaviours to a specified standard. Videotaping students at work is useful, as then students can rate their own performance against the criteria before discussing the supervisor's rating.

The closer the practicum is to the real situation, the greater its validity. The one feature that distorts reality is that it is, after all, an assessment situation and some students are likely to behave differently from the way they would if they were not being assessed. This may be minimized by making observation of performance a continuing fact of life. With plenty of formative feedback before the final summative assessment, the student might nominate when he or she is 'ready' for the final, summative, assessment. This might seem labour intensive, but recording devices can stand in for *in vivo* observation, as can other students.

In fact, this is a situation ideal for peer-assessment. Students will become accustomed to being observed by one another when they give and receive peer feedback. Whether student evaluations are then used, in whole or in part, in the summative assessment is a separate question and one worth considering.

In Chapter 8, we discussed some teaching/learning activities for facilitating functioning knowledge in workplace learning focusing on ILOs such as:

1 integrate knowledge and skills learned in university to real-life professional settings
2 apply theories and skills to practice in all aspects of professional practice
3 work collaboratively with all parties in multidisciplinary workplace settings
4 practise with professional attitudes and social responsibilities in their respective professions.

Because of the multifaceted nature of the different workplace learning situations, there can be no one fixed format of assessment. Assessment tasks and formats must be designed or selected to appropriately address the ILOs. Some common assessment tasks in workplace learning may include:

• observation of students' workplace performance
• placement case reports

- placement case/seminar presentations
- performance records
- reports from other staff in the placement centre
- feedback and evidence from others' relevant sources
- e-portfolio.

The ILOs to be assessed become the criteria of assessment. They should be clearly defined and understood by all parties concerned before the commencement of the workplace learning placement. Individual programme will have to decide on the type of assessment tasks that will require the students to enact the target ILO verbs and provide evidence of their achievement of such ILOs. In most cases, assessment is conducted either by the workplace educators or as a combined effort of the institute academics and the workplace educators. These assessments are teacher-centred. However, we should consider the possibility and feasibility of involving the students in assessing their own performance through peer- and/or self-assessment. These student-centred assessments enable students to have a clearer understanding of the ILOs and also have a shared control of their learning.

Assessing problem solving

Assessing problem solving can vary considerably. Standard problems usually call out a relational response, using conventional and correct paradigms. But even in these problem types, an 'elegant' (extended abstract) solution that is original and concise obviously should be given greater credit: this is creative work even if the format is conventional.

'Fuzzy' problems are those to which there is no definitive correct solution, only better or worse ones. Deciding whether a solution is 'better' or 'worse' depends on the context. All sorts of criteria could come into play: degree of originality, 'elegance', loose strings left hanging, cost etc. Each teacher will have to decide each case on its merits. In this open and complex area, as in the case of creativity, we return to the notion of connoisseurship: the expert should be able to recognize excellence in their field of expertise.

One area where assessing problem solving has well-established practices is problem-based learning itself. The essential feature of a teaching system designed to emulate professional practice is that the crucial assessments should be performance based, holistic, allowing plenty of scope for students to input their own decisions and solutions (Kingsland 1995). Some version of the portfolio, as open ended, may be useful in many programmes, but essentially the assessment has to be suitable for the profession concerned.

Medical PBL developed the 'triple jump' (Feletti 1997), but the structure applies to professional education generally:

1 *Dealing with the initial problem or case*: diagnosing, hypothesizing, checking with the clinical data base, making use of information, reformulating.

2 *Review of independent study*: knowledge gained, level of understanding, evaluating information gained.
3 *Final problem formulation*: synthesis of key concepts, application to patient's problem, self-monitoring, response to feedback.

While these steps emulate real life, Feletti asks:

- Do all steps have to be passed or can you average?
- Is there an underlying 'problem-solving ability'?
- Should performance at the various steps correlate together or not?

At the risk of sounding like a previous UK prime minister, Maggie Thatcher, we would answer 'no', 'no' and 'no':

- 'No', you cannot average because that may mask a crucial weakness.
- 'No', we are not interested in underlying problem-solving abilities, we are interested in whether the student can solve the problems in question.
- 'No', the steps or rather outcomes may well correlate but as teachers that is not our business. We are interested in the answers to each outcome step independently of any other.

All of which goes to show just what a grip measurement model thinking has had on our thinking: even on best practice PBL practitioners.

Assessing in large classes

Many teachers see no alternative to the final exam and the MCQ when assessing large classes. Using varied assessment tasks for higher level ILOs, especially those addressing functioning knowledge, is seen by many teachers as impractical in large classes.

However, it need not be thus. Of course, assessing the projects, assignments and portfolios of 400 students between the end of semester and submission of grades to the faculty board of examiners may be logistically and humanly impossible. But there are alternatives. While rapid assessments are more adapted to assessing declarative than functioning knowledge, we can make some suggestions for assessing both forms of knowledge.

Speeding up assessment procedures

Peer- and self-assessment

Peer- and self-assessment can slash the teacher's assessment load quite drastically, even when conventional assessments such as exam or assignment are used (p. 200). An additional benefit is that self- and peer-assessment are particularly well suited for assessing functioning knowledge and values ILOs such as teamwork and cooperation, because such assessments are what are required in real life.

Let us recap the advantages:

1 Self- and peer-assessment give the students first-hand, active involvement with the criteria for good learning.
2 Students learn how to select good evidence.
3 Judging whether a performance or product meets given criteria is vital for effective professional action.

It is important that these educational justifications are made clear to the students, not only because the rationale for all teaching and assessing decisions should be transparent, but because it is necessary to get the students on side. A common belief is that assessment is the *teacher's* responsibility and some students resent being required to do the teacher's dirty work (Brew 1999). Peer-assessment can also be stressful to some students (Pope 2001). It should be noted too that good students under-assess themselves, compared to what their peers would rate them, while poor students over-assess themselves (Lejk and Wyvill 2001b).

How well do self- and peer-assessments agree with teacher assessments? Falchikov and Boud (1989), reviewing 57 studies, found that agreement was greatest with advanced students, least in introductory courses; and in convergent content subjects, such as science, medicine and engineering, rather than in arts and social science. Good agreement requires explicit criteria of assessment and discussion and training in using them (Fox 1989).

As an operational rule of thumb, Boud (1986) suggests that if self- and/or peer-assessments agree within a specified range, whether expressed as a qualitative grade or as a number of marks, the higher grade is best awarded (collusion can be mitigated by spot checking): he estimates this procedure can cut the teacher's load by at least one-third. Gibbs (1999) cut marking time for the teacher by 18 hours a week by using peer-assessment, while summative marks increased by 20% simply because peer-assessment is itself a powerful TLA.

Group assessment

Group assessment is appealing in large classes. With four students per assessment task, you get to assess almost a quarter the number you would otherwise. But there are problems, particularly of plagiarism and its equivalent, freeloading. It is necessary to be very careful about who does what in the project, which is where peer-assessment helps, and that each student obtains an overview of the whole task, not just of their particular contribution, for example by writing a reflective report on how well each thinks they have achieved the ILOs (pp. 219–20).

Synoptic assessment

We met synoptic assessment earlier in connection with capstone projects. In essence, synoptic assessment is one large assessment task that might serve several ILOs, whether of one course, or of several courses, as in the case of

the capstone project. A research project, extended library assignment or a dissertation could address the ILOs of different courses, even though the ILOs themselves are different. It is, however, important that the teachers concerned agree as to the assignment. They may well have different rubrics to assess it by, to suit their own ILOs and purposes. Synoptic assessment is an important way of avoiding over-assessment.

Random assessment

One way of ensuring that students are motivated to put effort into a series of ATs is to use random assessment. In Gibbs (1999), 25 reports through the year were required, but as each was worth only a trivial 1%, the quality was poor. When the requirements were changed, so that students still submitted 25 reports as a condition for sitting the final exam, but only four reports selected at random were marked, two benefits resulted. The students worked consistently throughout the term and submitted 25 good reports and the teacher's marking load was one-sixth of what it had previously been.

Rapid assessment of declarative knowledge

One three-minute essay

This appeared as a TLA for large class teaching and as a learning activity and as feedback for the teacher (p. 115). It can just as easily be used summatively for grading purposes, but if so, the students should be told first as their strategies will be different. An obvious advantage is that the three-minute essay can be answered and assessed in, er, three minutes.

Short-answer examinations

These are answered in note form. This format is useful for getting at factual material, such as interpreting diagrams, charts and tables, but is limited in addressing main ideas and themes. The examiner is usually after something quite specific, and in practice operates more like the objective format than the essay (Biggs 1973; Scouller 1996). However, it has advantages over the standard multiple-choice in that it is less susceptible to test-taking strategies: the answer can't be worked out by elimination, it requires active recall rather than just recognition and it is easier to construct but not as easy to score.

Cloze tests

These were originally designed to assess reading comprehension. Every seventh (or so) word in a passage is deleted and the student has to fill in the space with the correct word or a synonym. A text is chosen that can only be understood if the topic under discussion is understood, rather like the gobbet (pp. 235–7). The omitted words are essential for making sense of the passage.

Concept maps

We have seen concept maps as a teaching/learning activity (p. 115, 117). They can also be used for assessment. They are particularly useful for giving an overview of the course. They need not take a long time to prepare and the teacher can tell at a glance if a student has an impoverished knowledge structure relating to the topic or a rich one.

Venn diagrams

A simple form of concept map, where the boundary of a concept is expressed in a circle or ellipse, and interrelations between concepts expressed by the intersection or overlap of the circles (see Box 11.3). Venn diagrams, like concept maps, are very economical ways of expressing relationships. They can be used for teaching purposes, in conveying relationships to students, and for assessment purposes, so that students may convey their ways of seeing relationships between concepts. Getting students to draw and briefly explain their own Venns, or to interpret those presented, can be done quickly, where the target of understanding is relationships between ideas.

Box 11.3 represents an item for an educational psychologist course ILO relating to professional interaction. There are three domains: psychologist, student and school, with each of which the psychologist has to interact at various times. For the student to be able to explain examples of the inter-actions (1) through (3) would indicate a high level of understanding of the psychologist's role. This item could be adapted to virtually any situation: just label the circles differently. Task 11.2 asks you to think about precisely that.

Letter-to-a-friend

This is written by the student to a friend, imaginary or real, who is supposedly thinking of enrolling in the course in the following year (Trigwell and Prosser 1990). These letters are about a page in length and are written and assessed in a few minutes. The student should reflect on the unit and report on it as it affects them. Letters tend to be either multistructural or relational, occasionally extended abstract. Multistructural letters are simply lists of course content, a rehash of the course outline. Good responses provide integrated accounts of how the topics fit together and form a useful whole (relational), while the best describe a change in personal perspective as a result of studying the course (extended abstract). Letter-to-a-friend also provides a useful source of feedback to the teacher on aspects of the course. Like the concept map, letters supplement more fine-grained tasks with an overview of the course.

Rapid assessment of functioning knowledge

Gobbets

Gobbets are significant chunks of content with which the student should be familiar and to which the student has to respond (Brown and Knight 1994).

Box 11.3   A powerful Venn item
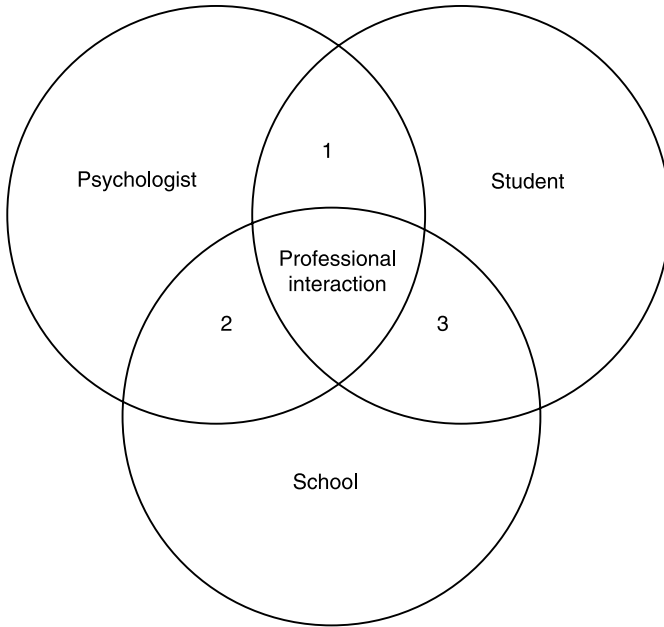
Write a brief sentence describing an interaction that would occur in the sites in relation to professional interactions.

1 _____
_____
2 _____
_____
3 _____
_____

This item is easily adapted to other areas by using different labels in each circle.

They could be a paragraph from a novel or of a standard text, a brief passage of music, a Venn diagram, an archeological artefact, a photograph (a building, an engine part) and so on. The student's task is to identify the gobbet, explain its context, say why it is important, what it reminds them of or whatever else you would like them to comment on.

Gobbets should access a bigger picture, unlike short answers that are sufficient unto themselves. That big picture is the target, not the gobbet itself.

Task 11.2   Venn diagram of TLAs and ATs for functioning knowledge

3

Individual students

Groups of students

Functioning
knowledge

1

2
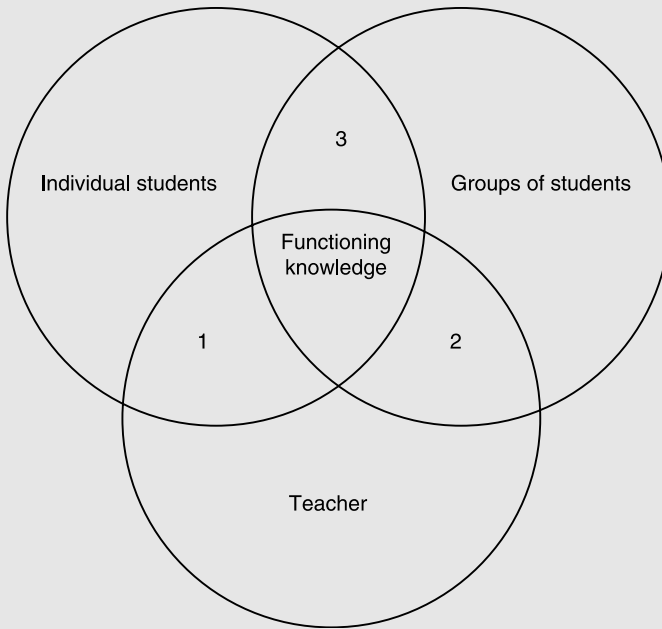
Teacher

What TLAs and ATs could be designed from interactions between the
parties in relation to teaching/learning and assessment of functioning
knowledge?

1 Teacher–individual students:
   TLAs: _____
   ATs: _____

2 Teacher–groups of students:
   TLAs: _____
   ATs: _____

3 Individual students–groups of students:
   TLAs: _____
   ATs: _____

Brown and Knight point out that three gobbets can be completed in the time
it takes one essay exam question, so that to an extent you can assess both
coverage and depth. They could assess either declarative or functioning
knowledge.

Video segments

These can easily be played in the invigilated situation, either publicly or using controlled individual PDAs with earphones, and the student is to apply a theory to interpret what is going on. This is a version of the gobbet with a more applied intent. The scenario could be of a social worker interacting with a client, a teacher in a classroom during a critical incident, a scene from a play, a historical re-enactment . . . the possibilities are endless.

Ordered-outcome tests

Discussed in Chapter 10, these typically address declarative knowledge in the lower levels and functioning in the higher.

Educational technology (ET) can help in rapid assessment, as well as in assessment generally.

Educational technology

ET has much potential in assessing both declarative and functioning knowledge, whatever the size of the class. Computer-assisted assessment (CAA) is directed towards declarative knowledge, using the power of the computer to assess conventionally but more efficiently in objective format. There are commercial MCQ banks, or the teacher can design and use them through WebCT or Blackboard.

CAA has several advantages over the usual pencil-and-paper format (Maier et al. 1998) because it:

- allows more than one attempt
- can supply hints
- provides immediate feedback
- can guide reading as a result of the test
- may be either formative or summative
- can present questions in random or standard order.

There can be a databank of several questions on a topic and, when a student logs on, a different sample of questions can be presented each time and the difficulty level each student is getting correct can be recorded, diagnoses made and suggestions provided as to how learning may be improved.

There are two main concerns about using CAA summatively. The first is that, in time, students can rote learn the correct responses, bypassing the mental process required to work out the correct response. This can be mitigated by randomizing the alternatives at each presentation, and, on the principle of alignment, using the system precisely for items that require rote learning, such as terminology, rules and so on. When used on a pass–fail basis, 'pass' requiring 90% correct responding, is identical with mastery learning. And that is the problem: it is too easy to equate good learning with 'knowing more', if that is all CAA is used for.

ET's most exciting use is in assessing functioning knowledge. Complex real-life situations can be given in multimedia presentations and students asked to respond. A video clip, with multiple-choice alternatives, could show a professional scenario, say a psychologist interviewing a client and the student is required to choose from the alternatives what type of situation is represented (Maier and Warren 2000); or in an open-ended version, asking the student to comment on what is going on, a critical analysis of the exchange, what steps the psychologist might take next and so on. Essay assessment can be facilitated by the teacher inserting comments from a bank of comments in appropriate parts of the essay.

Students may be required to set up their own web pages and post their learnings as they would in a learning portfolio and in portfolio assessment. The advantage here is that all the other students in the course can access it and post their own evaluative comments, thus providing formative feedback and self- and peer-assessment much more readily than when assessments are made in hard copy. The UK Open University uses a student-created website in place of a traditional exam; details and discussion of the issues involved such as plagiarism, are discussed in Weller (2002). In one university, each student has their own PDA that they use in a wide variety of ways throughout the course. They are able to take photographs and videos and post them on the net, communicate with their teacher and with one another, thus potentially turning every relevant experience into a learning event, a TLA, that can also be an assessed as an assessment task.

ET can be very sophisticated, as in *productive media*, using microworlds where the student builds his or her own system (Laurillard 2002): here TLA and assessment are intertwined as in real-life learning. In fact, the uses of ET in assessment are limitless, mimicking as it can much authentic assessment and by virtue of its interactivity allowing creativity of a high order.

As far as large class assessment is concerned, however, one must sound a caution. At first blush it sounds like the answer to assessment of high-order ILOs of functioning knowledge in large classes because the students can work away in their own time, but someone has to visit the websites and make the assessments. Certainly a large part of this burden can be solved by self- and peer-assessment and no doubt too programs like Scardamalia and Bereiter's (1999) Knowledge Forum can help to organize the mass of responses and evaluate the contribution individual students make to the forum.

ET may handle both quantitative and qualitative modes of assessment, with considerable logistic and managerial advantages. The potential of ET in assessment is most valuable in open-ended responding, in rich and contextualized situations, particularly with the advent of software like Knowledge Forum, which facilitates both formative and summative assessment at either individual or group level.

A problem with using ET for summative evaluation is that one needs to be sure that the person at the keyboard is the student who should be there. Hopefully, technology will be designed to beat even this problem. There is

always the problem of plagiarism, but that exists in both conventional and ET modes when conducted outside an invigilated environment.

Let us now consider that problem.

Plagiarism

Many students do not see plagiarism as a moral issue or that it undermines assessment (Ashworth et al. 1997). In some universities, up to 90% of all students plagiarize their work (Walker 1998). In 2002, the Australian Vice-Chancellors Committee commissioned a survey that found that 14% of students are plagiarists, but the figure is probably much higher because much goes unreported.

Susskind (2006) in a summary of various reports on plagiarism suggests that plagiarism in university essays is so rife that bringing back compulsory exams may be the only way to stop it: 'Plagiarism has knocked the stuffing out of the essay assignment,' Melbourne University's Simon Marginson is quoted as saying. 'It has contaminated the essay badly, making it a waste of time as an educational project. Things have moved beyond the current regimes of assessment. The system has broken down.'

Susskind summarizes the driving forces behind current plagiarism levels:

- The internet, with its 8 to 10 billion pages of information freely available.
- Since universities have gone corporate, passing students affects funding, so that teachers are not encouraged to report plagiarism, because of the fear of scandal and loss of funds from failed students. In one Australian university, the senior administration dismissed the claims made by an external examiner that several students had plagiarized their work as motivated by 'spite', although he had supplied the web addresses from which the students had downloaded their papers. This particular case ended in an independent inquiry that took the administration severely to task, resulting in much clearer definitions of plagiarism and tougher procedures, but the fact that this case even occurred is evidence of the extent to which some institutions not only may tolerate but even seem to condone plagiarism.
- Globalization in Australia has brought an influx of about 240,000 foreign university students, or 25% of the student body, many of whom struggle with English. Many feel it preferable to copy from sources rather than trust their own writing skills.
- Generation Y's tendency to question the value and legitimacy of copyright and intellectual property. Brimble and Stevenson-Clark (reported in Lane 2006) found that 40% of students from four Queensland universities thought that faking the results of research was just 'minor cheating', while 11% did not even regard it as cheating. Students were also very tolerant of copying another student's assignment or downloading from the web.

The true occurrence of plagiarism is hard to estimate: we have estimates

here ranging from 14% to 90%. Probably both figures, and all in between, are true in different universities. Plagiarism among international students presents a different problem, due to uncertainty about writing skill. In some cultures, students are taught that it is disrespectful to alter the words of an expert (Ballard and Clanchy 1997).

The hard remedy is to go back to compulsory examinations but the educational cost of that in terms of sound assessment would be huge.

A longer-term remedy is to change the culture from what it seems to be becoming. Students are much readier to cheat if they perceive the staff to be setting 'make-work' assignments or if they know that their assignments will be marked by tutors and part-timers whose heart isn't in it: surface approaches on one side breed surface approaches on the other. Setting worthwhile assessment tasks that draw meaningfully on the experience of the students is much more likely to be treated respectfully.

Smythe (2006) describes a way of successfully reducing plagiarism by requiring students to choose a research topic and a proposal, which is submitted early in the semester. Students are thus forced to think about the assignment from the start and to work on it until about the middle of the semester, when they hand in a first draft. This is not graded but comments and guidelines suggested, which are then built into the final version that is graded. Smythe's technique is labour intensive – 'only manageable in classes of under 100' – but the advantages are that students feel a personal commitment and they have to follow the guidelines provided.

This technique contributes to addressing the fundamental problem. Teachers need to convey a culture of scholarship and what research means. Brimble and Stevenson-Clark's finding that students condone cheating in research simply shows that they don't understand the nature of research or scholarship in general. It doesn't mean producing the results that the corporations who finance the research want to see. It means following the rules of empirical evidence gathering and of their replicability, of logical argument and of recognizing the work of other scholars and building on that in a transparent way: making clear what are the source data, what is the researcher's contribution and its originality. The conventions of citation always make it clear what is previous work and what is the researcher's.

What applies to scholars at the forefront of knowledge applies to undergraduate students when they submit their work. They need to be taught – and to see by example – what the nature of scholarship is and how, therefore, we need to be careful in citing others' work to make clear what is and is not the work of others. Many students plagiarize out of ignorance. They really don't understand the nature of the game.

The game, however, isn't always clear even to academics. Wilson (1997) points out that plagiarism proceeds in stages (that interestingly follow the SOLO levels):

- *Repetition*: simple copying from an unacknowledged source. Unistructural and unacceptable.

- *Patching*: copying, with joining phrases, from several sources. Some general, non-specific, acknowledgment. Weak multistructural and still unacceptable, but harder to spot.
- *Plagiphrasing*: paraphrasing several sources and joining them together. All sources may be in the reference list, but the sources pages are unspecified. Still multistructural and still unacceptable, technically, but a plagiarism programme would not detect it because no single sentence or paragraph can be traced, yet the ideas are all second hand. This shifts almost imperceptibly to the next stage.
- *Conventional academic writing*: ideas taken from multiple sources and repackaged to make a more or less original and relational type of synthesis. Quotes properly referenced, general sources acknowledged; the package may be new but are the *ideas* new? Unoriginal academic writing is plagiphrasing that is properly referenced.
- The extended abstract level would involve a 'far' transformation from the sources – genuine originality – which conventional academic writing should, but does not necessarily, incorporate.

Repetition and patching are clearly unacceptable, but students with poor writing skills of whatever cultural background find it hazardous to attempt to 'put it in your own words' when they are not confident in their use of the language. Lack of confidence in writing skill, especially in second-language international students who may have a good *content* understanding, can easily lead to 'innocent' patching. Such cases need augmented modes of assessment, such as a brief interview, or a less verbal medium such as a concept map.

Plagiphrasing should be unacceptable, but as it is not verbatim it is difficult to detect with software. However, the shift from plagiphrasing to conventional academic writing (presumably acceptable) is not always clear. While it may be sometimes difficult to decide what constitutes genuine and culpable plagiarism, repetition and patching are definite no-nos.

Teachers, on both local and international fronts, need therefore to be extremely clear about these levels of plagiarism and what the rules of referencing and of citation are. And, of course, what the penalties are. The culture of going soft on suspected plagiarism cannot be tolerated as it is anti-scholarship. In the corporatized world, a firm known for its cheating or false labelling in the end loses its market.

In summary, plagiarism can be minimized by the following means:

1 Creating a culture that emphasizes scholarly values.
2 Alerting students to the rules and the penalties for infringing them.
3 Using assessment tasks that use reflective diaries and personal experiences.
4 Using oral assessment and peer- and group assessment.
5 Checking assignments using software. *Turnitin*, licensed to 29 Australian universities, can detect plagiarism from web-based sources.
6 Increased invigilation as a last resort, but widening the range of assessment tasks within that context from the conventional written examination.

To wind up this chapter on assessing and grading functioning knowledge, you might care to tackle Task 11.3.

Task 11.3   Design an assessment task or tasks for one of your course ILOs

Select one ILO relating to functioning knowledge of your course and design assessment task(s) that will appropriately assess this ILO. To help you check the alignment between the task(s) and the ILO, identify what the students are required to do in order to complete the assessment task(s). The task requirements should be aligned to the ILO.

Course ILO: —————————————————————

Number of students in the course:

Assessment task	Student activities to complete the task (individually)	Student activities to complete the task (in group)
1		
2		

Now double-check if the student activities are aligned to the verbs nominated in the respective course ILO.

After designing the task(s), you will need to write the grading criteria for either the ILO or for each of the tasks.

Summary and conclusions

Assessing functioning knowledge

Functioning knowledge is readily assessable: it is deployed most often in the student's real-life experience. Assessment tasks include critical incidents, projects, reflective journals; case studies are assessment tasks that mirror professional life, while the formats of assessment such as the portfolio, contract and interviews are used in real-life assessment situations. Often high-level functioning knowledge is not addressed by one course ILO but by several, or by the whole programme, so assessment needs to be synoptic, addressing several ILOs. The portfolio and the capstone project are such assessment devices.

Assessing for creativity

Creativity is not something ineffable and unassessable: it is involved in all subject areas, especially in higher years, and needs to be assessed. Creative thinking requires a sound knowledge base, but beyond that requires critical awareness or reflection and the ability to generate original ideas or products that address critical reflection on what is the case. Assessment needs therefore to be open ended, allowing students to spring their surprises on us, but also they need to be surprises that are assessed within parameters that each situation would define as relevant. One suggestion for assessing creativity without any external 'impositions' of what creativity might be is to monitor students' self-assessments of their own creativity using their own standards of what creativity implies.

Assessing for lifelong learning

One highly defined area of lifelong learning is assessment of work-based learning, starting with the practicum, which is a representation of professional experience. Lifelong learning can also be assessed through its components: ability to work independently, to source information selectively, to monitor the quality of one's learning, to reflect transformatively to improve decision making, to use sensible strategies for tackling unseen problems and the like, all of which are variously assessable in open-ended formats.

Assessing problem solving

Assessing students' ability to solve 'far' or 'fuzzy' problems is similar to assessing the components of lifelong learning. A detailed technology of assessment has developed in problem-based learning itself.

Assessing in large classes

Large class assessment can go beyond MCQs and invigilated examinations. Self- and peer-assessment, synoptic assessment, group assessment and even random assessment can cut down the assessment load for both students and teachers while maintaining the integrity of the assessment. Even in the invigilated context, more exciting assessment tasks than requiring students to write answers to standard questions can be devised that address ILOs for declarative and functioning knowledge, such as gobbets, ordered-outcome items, concept maps and Venn diagrams.

Educational technology

ET has two main roles in assessment. Computer-assisted assessment makes the most out of the standard situation of asking standard convergent questions and providing feedback. Beyond that, interactive ET allows students to give free reign to their creativity by constructing models, using web pages, blogs and chats. Moreover, these formats can use self- and peer-assessment readily.

Plagiarism

Plagiarism is an ancient problem but it seems to be becoming easier and more rife with the use of the internet, with pressures on universities not to fail students and with cultural changes among Gen Yers and some international students in views of what constitutes intellectual property. The best answer to this is to institute a culture of scholarship in which the way of doing research, of submitting assignments and of setting assessment tasks as authentic and personally relevant, becomes the accepted norm. There are better ways of minimizing – but admittedly not eliminating – plagiarism than by increased invigilation.

Further reading

General assessment tasks

Brown, S. and Glasner, A. (eds) (1999) *Assessment Matters in Higher Education*. Buckingham: Society for Research into Higher Education/Open University Press.
Brown, S. and Knight, P. (1994) *Assessing Learners in Higher Education*. London: Kogan Page.
Carless, D., Joughin, G., Liu, N.-F. and associates (2006) *How Assessment Supports Learning*. Hong Kong: Hong Kong University Press.
Gibbs, G., Habeshaw, S. and Habeshaw, T. (1984) *53 Interesting Ways to Assess Your Students*. Bristol: Technical and Educational Services.
Nightingale, P., Te Wiata, I., Toohey, S., Ryan, G., Hughes, C. and Magin, D. (eds) (1996) *Assessing Learning in Universities*. Kensington, NSW: Committee for the Advancement of University Teaching/Professional Development Centre, UNSW.
Stephenson, J. and Laycock, M. (1993) *Using Contracts in Higher Education*. London: Kogan Page.

There are many books of practical suggestions on assessment; this list is a good sample. Brown and Glasner and Brown and Knight talk about the theory and practice of mainly CRA. Carless et al. and Nightingale et al. are both collections of 'best practice': Carless from university teachers across Hong Kong and Nightingale from across Australia. Carless's collection gives 39 case studies, grouped under various headings of self- and peer-assessment, group assessment, building feedback into assessment tasks, addressing higher order thinking and the like. Readers are likely to find several ideas to improve their own teaching and assessment. Nightingale's

collection is grouped under convenient 'verb' headings, such as thinking critically, solving problems, reflecting and so on.

Websites

www.cshe.unimelb.edu.au/assessinglearning/
www.assessment.edc.polyu.edu.hk/. Go to Assessment Resource Centre (ARC).
www.heacademy.ac.uk/Assessmentoflearning.htm
www.itl.usyd.edu.au/
www.tedi.uq.edu.au/. Click 'Teaching and learning support' then 'Assessment'.
www.brookes.ac.uk/services/ocsd/2_learntch/2_learnt.html. Especially click link to 'Computer-Aided Assessment Centre'.

E-portfolio

An overview of e-portfolio: www.educause.edu/ir/library/pdf/ELI3001.pdf
e-portfolio portal: www.danwilton.com/eportfolios/
Rubrics for electronic portfolio: www.uwstout.edu/soe/profdev/ eportfoliorubric.html

Assessing creativity

Jackson, N., Oliver, M., Shaw, M. and Wisdom, J. (eds) (2006) *Developing Creativity in Higher Education: An Imaginative Curriculum.* Abingdon: Routledge.
www.heacademy.ac.uk/2841.htm. See especially the chapters and papers by Lewis Elton, Norman Jackson and Tom Balchin.

Assessing workplace learning

www.polyu.edu.hk/assessment/arc. Go to 'Forum' where there are several papers on work-based learning and several other topics pertinent to this chapter.

Peer-, self- and large class assessment

Boud, D. (1995) *Enhancing Learning through Self-assessment.* London: Kogan Page.
Carless, D. et al (as on p. 245).
Gibbs, G., Jenkins, A. and Wisker, G. (1992) *Assessing More Students.* Oxford: PCFC/ Rewley Press.

Plagiarism

Home page for *Turnitin*: www.turnitin.com/static/plagiarism.html
Excellent article on plagiarism and minimizing it: www.library.ualberta.ca/guides/ plagiarism/

12

Implementing constructive alignment

Now that we know how to put together all the components of constructive alignment – writing ILOs, designing TLAs and assessing and grading students' performance – we have the task of implementing courses and programmes. Introducing educational change into the system is a procedure with its own pitfalls. We look at implementing constructive alignment at two levels: by the individual teacher and by a whole department or faculty. In both cases, the strategy of implementation is similar, using transformative reflection and formative evaluation. Implementation isn't a one-off process but a continuing action learning cycle of reflection, application and evaluation that is basic to all quality enhancement. In fact, all procedures relating to implementing constructive alignment can be generalized to create quality enhancement procedures for the whole institution. The key is that all structures and procedures to do with teaching and learning, from classroom level to procedures and regulations that apply across the whole institution, are founded in the scholarship of teaching and learning to create an organic, reflective institution.

A framework for implementing constructive alignment

So far, we have been presenting the framework of constructive alignment; the next step is the process of implementing it. As 'theories of education and theories of change need each other', as Michael Fullan (1993) puts it, so do frameworks for teaching and learning need a framework for implementing them. This is our concern in this chapter.

As we argued in Chapter 2, the means by which considered professional change takes place is through transformative reflection (p. 43). In the case of implementing constructive alignment, who are involved in this reflective

process? We distinguish three major parties: teachers, students and the institution, whether the last refers to teaching or to administration. The intended outcome of this reflection is the successful implementation and continuing enhancement of constructively aligned teaching and learning. Let us put all this together in a Venn diagram (Figure 12.1).

Three parties participate in this transformative reflection: the *teachers*, the *students* and the *institution*, which may variously be the department, the faculty or school or the whole institution and its committees, such as senate or academic board. Each of these participants reflects in interaction with the others in the following three domains or contexts:

1 teacher and students
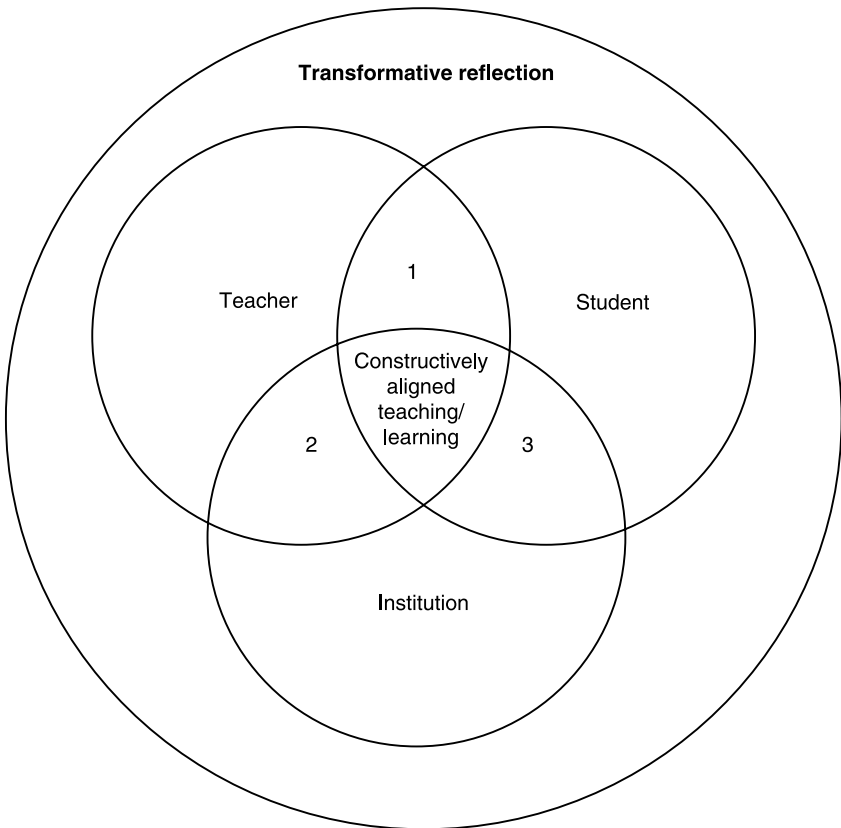2 teacher and institution
3 students and institution

Figure 12.1   Three domains of interaction in implementing constructively aligned teaching and learning

These domains of interaction define foci for facilitating implementation and each of which should have built-in quality enhancement mechanisms, as the aim is not only to constructively align teaching and assessment, but to develop mechanisms for not only assuring quality but for *enhancing* quality. Just as teachers need to eliminate or minimize those factors that encourage a surface approach and to maximize those factors that lead to a deep approach, so those factors that inhibit the implementation of constructive alignment should be minimized and those that support and encourage it should be maximized. But first let us go straight to the engine room: transformative reflection.

Revisiting transformative reflection

We met Stuart Tyler in Box 7.4 (p. 130), but we haven't yet met Stewart Taylor. Both Stuart and Stewart had problems teaching oedema associated with cardiac failure to nursing students; both thought that the problem needed realistic three-dimensional videos, using motion, to model the process rather than lecturing and illustrating with still, two-dimensional diagrams. Both found the videos made little difference to student performance. Stewart concluded that he'd done his best; he'd used the most suitable ET according to all the good books but it turned out not to be worth the extra hassle. He went back to lecturing with diagrams. Stuart, by way of contrast, reflected: 'It didn't work, and it should have worked. *Why* didn't it?' He had a theory, which, when he thought about it, told him that there was lack of alignment between his existing assessment task and his desired outcome. He made an aligned assessment sheet a teaching/learning activity – and failure rates dropped to near zero (see Box 7.4).

This is an example of transformative reflection, using constructive alignment as the theory to effect the transformation from a not-working TLA to a working one. Stuart's case illustrates a very important point. Constructive alignment isn't just a method or a model to be implemented: *It provides a conceptual framework for reflecting on the questions that need to be answered at crucial stages of teaching in general.* Those questions are:

1 What do I want my students to learn?
2 What is the best way in my circumstances and within available resources of getting them to learn it?
3 How can I know when or how well they learned it?

These are the questions, of course, involved in designing ILOs, TLAs and ATs. These components, of curriculum, teaching method and assessment, are present in *any* teaching. What the constructive alignment framework does is invite us to question what we are doing as teachers at those crucial points and to rethink other ways of carrying them out, as did Stuart. But to ask those questions and rethink answers to them as the application of transformative reflection requires a theory. Figure 12.2 illustrates the steps in

transformative reflection, here worded for the individual teacher, but which apply equally well *mutatis mutandis* to deans, deputy vice-chancellors and their respective creature committees.
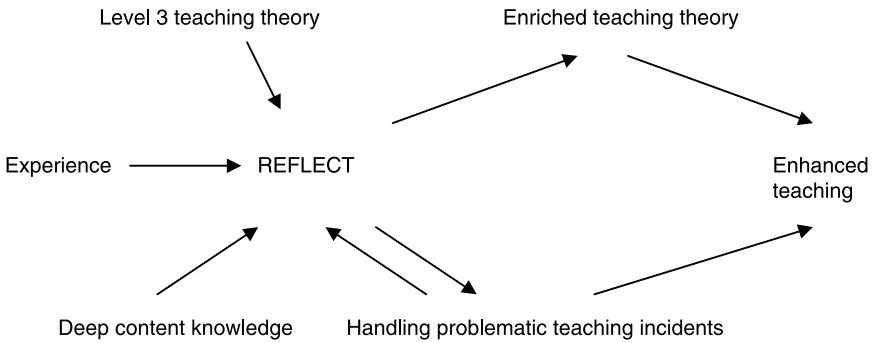
Level 3 teaching theory   Enriched teaching theory

Experience ⟶ REFLECT   Enhanced
teaching

Deep content knowledge   Handling problematic teaching incidents

Figure 12.2   Theory and transformative reflective practice in teaching

A reflective teacher starts with three important components:

1 *Experience.* You cannot reflect on a blank slate. When you come across a difficult or challenging situation, the first question is: 'Have I come across anything like this in my past experience? If so, what did I do then? Did it work?' A further set of questions: 'What resources did I need then? What are at my disposal now?'

2 *Deep content knowledge.* You cannot teach effectively if you don't know your subject content very well indeed. So well, for example, that you can see instantly whether an unexpected answer a student confronts you with is original or misconceived (see Billy and the Creamed Wheat in Box 8.3, p. 147), or that you can see – on the run – powerful but simpler ways of expressing an idea.

3 *A Level 3 theory of teaching.* You can reflect with any theory. If you were a Level 1 teacher you might say: 'It didn't work because those students are just so *thick.* I suppose I could talk more slowly.' As a Level 2 teacher you might say (with Stewart): 'Well the video didn't work. I'll do what I know I can do: lecture well.' As a Level 3 teacher you say (with Stuart): 'Why aren't they learning? How can I get them to be relevantly active?' *That* is the sort of theory we want here, one that focuses on what the student does. This is a cyclical process; you keep looking at what they do, what they achieve and link that with what you are doing. You get to know your students as learners very well.

The next stage is to reflect on the teaching incident, using all three points, plus the specifics of this particular incident. There are several outcomes:

1 *Your teaching is enhanced,* eventually. You may need several gos at the problem.

2 *Your experience is enriched.* Each go at the problem adds to your store of experiences.

3 *Your teaching theory is enriched.* Using the theory in action makes you realize what aspects of the theory work and what do not.

   This, then, is how transformative reflection enhances the quality of what it is we are doing. When used by individual teachers, as here, it shows the way forward under difficult or changing circumstances. When used by administrators and committees, as it will need to be particularly in the interface between teachers and the institution, (2) in Figure 12.1, the following are the sorts of question that teacher, committee or administrator, as appropriate, need to ask in order to implement constructive alignment effectively:

1 What is the espoused theory of teaching we are operating with here? Chapters 1–11 provide the answer to that.
2 How can the theory provide answers to the problems and issues of implementation? What needs doing to support, facilitate and maintain implementation?
3 What is preventing effective implementation?

In sum, transformative reflection can be used for implementing constructive alignment at two levels:

- In the classroom, by individual teachers in one or more courses for which they are responsible.
- In the institution, at the level of department, faculty, school or the whole institution.

Implementing at either level requires some necessary conditions:

1 A felt need for change by all major participants.
2 A clear conception of what an aligned teaching system is.
3 The operational decisions made concerning ILOs, TLAs, and ATs and how to grade students' performances.
4 A 'willing' climate, in which all participants, and those whose cooperation is necessary for the project to go ahead, will be on side and institutional policies and procedures that support constructive alignment.
5 Sufficient resources: resources such as financial, time for development of constructive alignment, space, educational technology and the like.
6 Formative evaluation of progress, including evidence that the new system is working properly; and, if not, the means of finding out what to do to correct matters.

Implementation in the individual classroom: Teacher and students

We start with the first domain of interaction – teacher and students. Let us assume you are willing to give constructive alignment a go. If you have persisted with this book so far, and have carried out the suggested tasks, then you

will have met the first three necessary conditions: you are motivated, you have a clear idea of what you are trying to do and you have made all the main decisions.

Availability of the resources you think you need is limiting rather than lethal. You can always do something with what you have even if it is not what you'd most prefer to do. The first resource is time. You need time to prepare for the first run for planning and writing the ILOs while at the same time continuing to teach in the old way. If your head of department is sympathetic to what you are doing you might get some relief from other duties, which would make life easier. If not, then your commitment and enthusiasm need to be that much greater. However, once the course has run for a semester, it will demand much less time in maintaining and fine-tuning than the first run took.

Personnel and financial resources may present some problem: some ideal decisions are 'expensive' in terms of resources, but if the resources aren't available, it is usually possible to make less expensive decisions. The selection of teaching/learning activities is probably the most resource intensive. You might want to break down a large class into tutor-led groups or to utilize two separate classrooms, but if additional rooms or tutors are not available, those TLAs you had in mind may not be feasible. However, as we saw in Chapter 7, there is a range of TLAs available that you can use yourself in a large class: not ideal, but better than lecturing.

Policies and regulations to do with assessment will probably be your biggest difficulty. If there is an iron-clad policy of grading on the curve, then a constructively aligned system is in real trouble. You could state your ILOs, align your TLAs and assess with aligned ATs – but then submit your grades according to the required proportions. That is possible, but it is an act of academic infidelity: you'll probably feel guilty afterwards and you'll have some explaining to do to your students. They may never forgive you.

Other regulations may require a fixed percentage of the final grade to be by invigilated exam. The main problem here is that if the proportion is too high, it may severely limit the assessment of the more important, high-order ILOs (see p. 200). However, 'by examination' doesn't necessarily mean you have to use the assessment task of writing answers to questions but that your ATs are to be set in a situation that is timed and supervised, in which case you can use ATs in which some high-level assessment may take place (p. 232 ff.). Another regulation that is a nuisance rather than a critical impediment is being required to report assessment results in percentages or in other quantitative terms. It is important – but again not absolutely *vital* (see p. 209–11) – that the actual assessment is done qualitatively, but having done that, it is simple to allocate numbers to grades (Table 10.3, p. 211) and give admin their precious numbers. They'll most likely convert them back to grades anyway.

As to the willing climate and cooperation of colleagues, that may or may not be a problem. While Lee Shulman (quoted in D'Andrea and Gosling 2005: 67) complains that 'we close the classroom door and experience

pedagogical solitude', as opposed to scholarly research where we work in a community of scholars, that also means that you can get on with your teaching as you see fit. Actually, Shulman wrote that 15 years ago and it is almost certainly less true today than it was then. Today's universities, competing for markets, on the one hand, and packaging courses and programmes for credit transfer, on the other, require a degree of homogeneity within programmes and that they address graduate attributes. This requires cooperation between colleagues in planning individual courses within programme requirements. Shulman today would feel less pedagogically lonely, even if he might feel a twinge of loss of what was then quaintly known as the 'academic freedom' to teach as he saw fit. Today's conditions of accountability make the issue of implementation much more an institutional matter than used to be the case, as outlined later.

Before we move onto that, however, there is the question of the formative evaluation of progress. You have designed your course or courses and taught it for one semester. Did you, as an individual teacher, get it right? How would you know if you did and how would you ensure that problems were rectified and ILOs, TLAs and ATs fine-tuned to keep doing it better?

The answer is action research, which we introduced in Chapter 3.

Quality enhancement through action research

Action research is built on the 'action research spiral': 'reflect, plan, act, observe, reflect, plan, act, observe etc.', each such cycle building on the previous one (Kember and Kelly 1993). Applying this to implementing constructive alignment in your own classroom, you might take day one of implementation: to present the ILOs to the students and explain that they are required to produce evidence as to how well they meet them. Box 4.1 (p. 51) explains what happened in John's first implementation: the students hadn't come across this before and many didn't like it. John then reflected and decided to introduce a trial run with the portfolio and to negotiate with them about some teaching/learning activities. It is essentially a cycle of transformative reflection, beginning from day one: you first reflect on the situation or problem, plan what to do, do it, observe the effects it has, reflect on those effects, then plan the next step and so on. Even when the course is running for the first time, you will have your own gut feeling as to how well the students are taking it. Those feelings are important, the antennae that any teacher uses, but in action research you take deliberate steps to obtain harder evidence than your own intuitions, important though the latter are. More formally, the action research cycle goes like this:

1 Obtain evidence of progress.
2 Reflect on what seems to be working and what seems not to be working.
3 Introduce variations at the points in the system that seem not to be working as you had hoped.

4   Obtain evidence on how these changes seem to be working.
5   If they are not working, repeat (3) as appropriate.
6   Use the offices of a 'critical friend' wherever possible.

It may sound rather bothersome, but much of the 'evidence' is there already, it's only a matter of systematically collecting what you think is sufficient for your purposes. Remember that much action research, well carried out, is publishable. If your institution supports publishing the teaching of your content area as well as publishing research in the actual content – as it should (see later) – you can kill two birds with one constructively aligned stone: you improve your teaching and keep on improving it and you add to your publication record (Kember and McKay 1996).

Evidence comes largely from two perspectives: the students' and the teacher's.

Evidence from the students' perspective

Improved student perception of teaching/learning conditions

A questionnaire needs to be designed that tells you such things as: Were the ILOs clear? Did the TLAs help them achieve the ILOs? Which did not? Did the ATs address the ILOs? Were the grading rubrics understood? Students might rate the ILOs themselves for clarity, thus giving a concrete and articulated look at what students think. Further, when teachers write the ILOs knowing that students will be rating them, they write them more effectively (Peter Looker, private communication). Focus group interviews are also valuable sources of evidence. Selected students could be asked to keep reflective diaries in which they comment on their learning environment.

Student reflections

The students should also be brought to the process of reflection, in particular in elaborating on what we have just seen, on the impact that statements of the intended learning outcomes upfront had on their planning for learning, how they went about their learning, whether they had any insights into the way the teaching/learning activities helped them realize the ILOs, whether they thought the assessment tasks were 'fair' (that is, were aligned to the ILOs). Susan constantly reflects on how she is going about learning, on whether her learning and study strategies are fruitful, whereas Robert does not – which is Robert's main problem. Thus requiring students to keep a learning diary, to bring them into the assessment with peer- and self-assessment, to assess by learning portfolio, are situations that encourage students too to carry out transformative reflection. This is not only helpful for them but is very important feedback in action research on constructive alignment.

Grade distributions

Grade distributions can be compared prior to the implementation of constructive alignment and after implementation, but *only if* the same grading criteria are used in assessing student performances. Has the *nature* of the grades changed? Is the 'A' grade after implementation the same kind as previous 'A' grades? Remember, you can't compare the distribution of norm- with criterion-referenced grades, as norm-referenced are artificially held constant year after year.

Samples of student performance

Pre- and post-implementation samples can be kept in a library of assessment tasks representing the worst grades, middle grades and best grades.

Students' approaches to learning

Are the Roberts becoming more like Susan after the introduction of constructive alignment? The shortened two-factor version of the study process questionnaire (SPQ) (Biggs et al. 2001), which has only 20 items and may be copied from the reference, will tell you. The SPQ is designed to reflect students' reactions to teaching in terms of their approaches to learning. We want to be able to say: 'Before I implemented constructive alignment, the students in the class were on average higher on the surface scale and lower on the deep, but after implementation they are higher on the deep and lower on the surface scale. It looks like I'm on the right track'.

Evidence from the teacher's perspective

Teaching portfolio

The best source of evidence is a teaching portfolio. A general portfolio is described later (p. 166–8) but sections of that would be appropriate for keeping a record of reflections on implementation, with the following additional foci, compiled preferably while still teaching the course before constructive alignment was implemented, and of course continued afterwards:

1 Difficulties you have had in implementation: with ILOs, TLAs, assessment tasks or with any other aspect.
2 Insights into teaching and learning you have gained.
3 Evidence of successful teaching incidents with constructive alignment.
4 Comparisons with the 'old way'.
5 Suggestion for further improving implementing constructive alignment or your teaching in general.

Role of 'critical friend'

Reflection is often not best carried out alone. So, as the fish is the last to discover water, it is helpful to have a 'critical friend' on dry land. This is a complex role, part partner, part consultant, but most of all a mirror to facilitate reflection (Stenhouse 1975). Your own reflections are sharpened if

shared with someone with a different perspective – and with some technical expertise. Different people can take the role of critical friend: a colleague in the same department is particularly convenient as critical friend, because they know the context and at the right time can gently feed in suggestions to be reflected on; if they have educational expertise, so much the better. We look at peer review later as a normal part of quality enhancement; part of that process could well include the role of critical friend. Teaching developers are ideal as critical friends, especially in the early stages or where specific technical advice is required, but not the head of department, even if he or she is a friend.

Changes to your own teaching are more likely to be sustained and effective the more those changes are supported by departmental/institutional policy. Say that in your first run of constructive alignment, you get unusually high numbers of high distinctions and distinctions, say 37% and 40% respectively, whereas your colleagues usually turn in about 10% and 15%. At the examiners' meeting your results are queried, you explain what construct-ive alignment is all about, your results are passed.

The same happens next semester, but mutterings about 'slack standards of assessment' are louder. The students have given your course high evalu-ations, which proves to your more unkind colleagues that it is indeed a soft option – although when the students see what they have to do to get the high distinction, and at what standard, they may not see it as a soft option at all.

It would have been psychologically and politically easier if you and a col-league were critical friends for each other. There would be a replication of implementing a course and if you both obtained similarly improved grade distributions, remaining colleagues at the examiners' meeting might be more easily convinced. It is a short step from there for teachers within the department to act as critical friend for each other. Maybe the whole depart-ment becomes involved, not just in improving the skills of individuals, but the offerings and working of the department itself would then become the subject of collective reflection.

Which brings us to implementation at the departmental or other insti-tutional level.

Implementation at institutional level: Teacher and institution

We now turn to the second domain of interaction: teacher and institution. Implementing constructive alignment across the whole department, faculty or institution is obviously more complex than an individual teacher imple-menting one or more courses.

Leadership

The most important factor in department- or faculty-wide implementation is *leadership* (Taylor and Canfield 2007; Toohey 2002). Most of the conditions

required for effective change – a felt need for change, a clear conception of an aligned teaching system, the operational decisions concerning ILOs, TLAs and assessment and grading, and providing sufficient resources – are in the hands of the departmental or school leadership, whether that is an individual or various committees on which teachers are represented.

The formal leader, be it head of department, dean or subdean, has first of all to understand constructive alignment and the demands proper implementation makes on resources, and then, once the decision to implement it has been made, to emphasize with a smile that 'We *are* going ahead with this, you know!' The matter then becomes one of expertise in implementing, a point we return to later. There will also need to be other sorts of leader. A process leader orchestrates the various phases of implementation. A political leader is necessary who understands how the committee system works, who knows whose elbows to grip in easing the implementation through various committees and whose ruffled feathers to smooth of those who feel that their babies – the forms for courses and programmes, the teacher feedback and student feedback questionnaires, the software for collating and reporting student progress – have to be redesigned.

Once the decision to implement constructive alignment has been taken, there will need to be widespread *consciousness raising*, addressing such questions as: What *is* constructive alignment, what are the advantages, how difficult is it to implement, why go to all that bother and anything else the staff may want to know. This phase may well require the services of an outside consultant who can answer any questions, correct the misapprehensions and ease the anxieties that many are likely to hold.

The second phase is the actual *implementation*, where ideally somebody can work within the department who is an expert in both the content being taught and in constructive alignment. This involves working closely with teachers on writing intended learning outcomes, which must be done correctly, as all else, the teaching/learning activities and the assessment tasks, hinge on the ILOs. In our experience, one or a few teachers in the department 'get it' fairly quickly; their ILOs are well written and they have a flair for generating aligned and inventive TLAs and ATs. Their courses will become models for others, so it is important that these pioneers get it right. These people should be identified and become internal resources persons for others in the department – with a formal status, such as 'constructive alignment facilitator' – and their teaching loads adjusted accordingly. When this happens, the external subject consultant can take a much lower profile, perhaps becoming a resource to be called on from time to time. A department needs to become self-sufficient as soon as possible, problems arising being solved by those who know and understand the workings of the department. As we emphasize later, the institution's staff developers should have an ongoing role here.

Strategies of implementation

Do you start small with one or two courses or do you go for broke and implement across the board? Is it best to do so a course at a time, seeing how it goes, what the problems are, what works and what doesn't and learning from initial mistakes, introducing constructive alignment more broadly as colleagues become convinced? Or is it better to be more top-down, to announce ultimate deadlines that *must* be met, with rewards for the early birds and penalties for the slackers? Michael Fullan (cited in Toohey 2002: 196) suggests the former strategy, which sounds very logical. Try pilot studies first and then as it becomes apparent that the change is going to work, senior management will take it up and bring about the necessary policies and directives for the whole reform to work. But does this mean every institution has to run its own pilot studies? At what point is likely success assured? What do you do about those who still have doubts but whose cooperation is needed?

There will always be doubters. There are teachers who see themselves as committed researchers and who don't want to spend what could be time doing research in designing new courses that – as far as they are concerned – are working well enough already. Other teachers, frequently the older ones, see themselves as inspirational lecturers with a wealth of teaching experience behind them and a knowledge of all the Level 2 teaching tricks; they see no reason to change their teaching. If the conservative teachers are in the minority, a sound strategy is to leave them to it; they'll come to see that they'll be left behind. When a whole department requires courses to be written in a certain format, with ILOs, TLAs and ATs spelt out, with 'official' rubrics for different assessment tasks or outcomes, the conservative teacher would find it difficult not to fall in line. Or as Toohey reports (2002), people will start to see that 'they don't have to feel bad about spending so much time on teaching because they're getting so much reward from it and enjoying their teaching time' (p. 196). Most younger teachers don't have so much baggage and self-belief in their teaching and may indeed welcome a whole-department approach.

The answer to the question of strategy – start small at first, or go for it across the board – surely depends on the balance of pro- or anti-feeling among those who have to participate in one way or another. If change is to be effected, everyone – or a large majority – needs to be positively committed. If the implementation was a collective decision by a department in which all or most cheerfully voted to implement constructive alignment, you have an excellent start as colleagues can mutually support each other in maintaining their commitment, keeping up motivation, solving problems and so on (Taylor and Canfield 2007). (We summarize this account of a successful change to constructive alignment in Chapter 13, along with examples of implementations at the course level.) But where, as often happens, the decision comes top-down, there is a danger of a culture of compliance forming and how things play out thereafter depends on many factors (Knight and Trowler 2000).

The best case scenario is both top-down and bottom-up, where both troops and managers agree to implement: they need each other if it is to work. If a department wants to go ahead and the middle managers are half-hearted, fearing perhaps the criticisms of more conservative colleagues; or if the managers are gung-ho but the teachers feel they are already doing a good a job and see the direction to change as a criticism, trouble lies ahead. When new programmes or courses are approved, it is common practice in outcomes-based institutions to require a statement of outcomes for each course, what TLAs and ATs address what outcomes – but in a compliant culture, once the paperwork is done, it is business as usual: lecture plus tutorial and the majority of the final grade by examination.

Where the majority of a department or faculty needs convincing, starting small with a few courses involving one or a few willing teachers is much more likely to bring the majority around when they see how successful it is.

Change conceptions first or actions?

We know that teachers teach in a way consistent with their conceptions of teaching (Kember 1998). So before implementing constructive alignment itself, should we address teachers' conceptions first, by getting participants to *think* about teaching in terms of a Level 3 theory? Kember thinks that we should, as teachers would then understand more clearly what Level 3 teaching meant: otherwise, they will revert to their old ways.

Guskey (1986), by way of contrast, says it is easier to change people's behaviour first, *then* to change their thinking. He sees improving teaching as like getting people to quit smoking. Education campaigns, which are aimed at what people think, are not as effective as 'No smoking' signs, or raising the tobacco tax. Then, when their behaviour is forced to change, people begin to think it might be a good idea to stop smoking anyway. Accordingly, Guskey suggests that teaching development should aim at changing teachers' behaviour first, then their beliefs will follow and the change will be maintained. According to this approach, the dean or whoever would issue a directive: 'From Semester 1, 2010, all departments will use constructive alignment. In the meantime, workshops will be run, of which all staff are required to attend at least two.'

It works both ways. Some sort of official directive is necessary to get things moving. Thinking and doing reinforce each other, as in any reflective practice. Let us say you are not really convinced that constructive alignment is a good idea, but you are willing to give it a try. But you find it does work. You see that students are learning things you never anticipated; you begin to revise your ideas and conclude that good teaching is about what students do, not what teachers do. No longer sceptical, you ask: 'Why does it work?', a question that involves a transformation in thinking.

Ho (2001) created an explicit link between changing conceptions and appropriate teaching behaviour by confronting teachers with what they said

they believed with what they actually did: as a result, many changed their conceptions and their practices, with positive results for the students' approaches to learning. Prosser and Trigwell (1998) also emphasize that ways of teaching are interlinked with what teachers think teaching is. They need to:

1 become aware of the way they conceive learning and teaching, within the subjects they teach
2 examine carefully the context in which they are teaching, so that they are aware of how that context affects they way they teach
3 seek to understand the way their students perceive the learning and teaching situation
4 continually revise, adjust and develop their teaching in light of this developing awareness.

To help teachers achieve this self-awareness, Prosser and Trigwell have developed the *Approaches to Teaching Inventory* (ATI), which addresses what they think and what they do. Levels 1 and 2 are combined in an information transmission/teacher-focused approach, which is contrasted with a conceptual change/student-focused approach (Level 3). This is a very useful instrument in teaching development, making teachers really think about the nature of teaching and learning.

Teachers always have some sort of theory of teaching, as we saw in connection with Figure 12.2 (p. 250), but it is usually implicit and unexamined. The possibility that there are different ways of looking at teaching does not occur to many teachers. Entwistle (1997) points out that the systemic (Level 3) view 'offers a powerful insight to many staff in higher education who have not thought about teaching and learning in this way before . . . Indeed, that insight can bring about a totally new conception of teaching'(p. 129). And with that insight, the recognition that practice will need to change will follow.

Once constructive alignment is up and running successfully, conceptions will assuredly change. However, it might facilitate implementation by embarking first on conception changing using Prosser and Trigwell's *ATI* in a series of workshops, before proceeding with the actual implementation itself.

Formative evaluation

Even before courses are implemented, plans for ongoing formative evaluation need to be established. As Toohey (2002) wisely puts it: 'Evaluation will always occur whether planned or not' (p. 197). Someone, usually the sceptics, will be only too willing to watch closely for any problems and gleefully pass on the good news that this new-fangled approach isn't working. Such judgments are anecdotal and most frequently made from a different perspective from that on which the course was designed. Critics of problem-based learning point out for instance that PBL graduates don't know as

much as traditional medical graduates – and can even produce evidence to prove that. Horror, PBL is a failure! Well, no, actually, because PBL graduates were *intended* to know less, and in the time they would otherwise spend knowing more, they would learn the skills to deploy what they do know more effectively and where they don't know, how to go about finding out what they need to know. On those criteria, PBL is demonstrably more effective than traditional teaching (pp. 156–7).

The answer to such ill-informed criticism is to pre-empt it by planning a departmental or institutional evaluation. As with the individual teacher, the general plan is to employ action research (see pp. 253–4), only with a whole department or institution the design of the action research would need to be more comprehensive. In addition to the evidence taken from the students' and the teacher's perspectives, we have the departmental perspective to take into account.

The department, or its teaching quality committee (if it doesn't have one it should have, see later), could submit a reflective report on the experience in implementing constructive alignment at the end of the first year of implementation. Issues to be addressed in the report may include:

1 Impact on teaching. Data from teachers' portfolios could be compiled, and course evaluations by students.
2 Impact on student learning. Much the same data as gathered by teachers for individual course evaluations (p. 253ff).
3 Comparisons across different aligned courses: What ones are working well? What ones are experiencing difficulties? What difficulties and how were they dealt with?
4 What operational structures has the department with respect to implementing and monitoring the innovation?
5 Concerns regarding continuing implementation.
6 An action plan for future improvement.

Regular sharing sessions, where staff tell each other what is working for them and what is not working, are excellent in themselves and also provide data on how well constructive alignment is working and where it is not. The experience of one teacher could easily provide the answer – or at least a point of reflection – for another who is experiencing problems.

The formative evaluation of courses is an intrinsic part of implementation. It provides formative feedback and material on what is working and what is not, with transformative reflection suggesting how solutions to problems might be tried in the action research model to achieve ongoing quality enhancement.

It also pre-empts the nasty gibes of the doubters.

Implementation at institutional level: Student and the institution

We now turn to the final interface between students and the institution. Most of these aspects have been dealt with already. Graduate attributes are student-related factors that are woven deeply into the programmes and courses and are dealt with particularly in Chapter 5. Student feedback on how graduate attributes are working from their perspective may be considered to be important, as they may not be fully represented in course ILOs.

Many universities administer a graduate survey to students at the time of graduation or shortly after graduation when the graduates have been in the workforce. Apart from asking information on career destination and development, these survey questionnaires also provide useful feedback on graduates' reflections on how well the graduate attributes have been met (see examples of graduate survey questionnaires provided in 'Further reading' at the end of the chapter). The survey data should be substantiated, if possible, by focus group interviews of senior year students or graduates asking them to reflect on the overall university learning experience with respect to achieving the graduate attributes. Feedback from these sources provides valuable food for transformative reflection by the institution at all levels.

Student input from questionnaires is very important: both from questionnaires directly related to action research in implementing and improving constructively aligned courses (p. 253ff) and from more general aspects of their learning. Apart from evaluating and providing feedback on teaching, learning evaluation questionnaires asking students to self-evaluate their own learning experience and outcomes encourages them to be reflective learners. *The Course Experience Questionnaire* (CEQ) (Ramsden 1991), used regularly in Australian universities since 1993, is an all-purpose questionnaire to gauge students' reactions to particular courses. It contains the following scales: good teaching, clear goals and standards, appropriate assessment, appropriate workload, generic skills, learning community, overall satisfaction. In the present context, it could be used to gauge the student response to a course before constructive alignment was implemented and the response by successive cohorts after implementation. Changes in scale score could be used as a basis for transformative reflection for enhancing teaching and assessment practices. The CEQ, as a general instrument, also enables both longitudinal comparisons within a course from cohort to cohort, to horizontal comparisons across courses, comparing constructive alignment with non-aligned courses or with constructively aligned courses with each other.

Student representation on committees, especially committees dealing with teaching and learning at departmental or institutional level, is important for obtaining student input on how implementation is progressing: in fact, student representation should be part of normal quality enhancement procedures.

Apart from the general induction or orientation to university that students get, should there be any special induction with reference to constructively aligned teaching and learning? Or should this be left to when students turn up to classes on day one and are given their course outlines, just like in any other course?

The answers to these questions probably depend on the stage of implementation. If students are used to traditional teaching and they are facing a large-scale changeover in the upcoming semester, it could well be good public relations, as well as saving multiple explanations, to have a meeting of students with presentations about the 'new' approach to teaching and assessment, how knowledge of outcomes will make things clearer for them, followed by a discussion panel with Q&A, with some input from senior students who have experienced constructively aligned courses. Taylor and Canfield (2007) found that with increasing exposure to constructively aligned teaching, students' ratings along 'good teaching', 'clear goals and standards' and 'appropriate assessment' scales progressively increased. It would be very helpful for first-year students to hear this sort of experience of constructively aligned teaching from older colleagues.

The reflective institution

Let us now discuss more general issues of quality assurance (QA) and quality enhancement (QE). QA is concerned with maintaining the quality of the work institutions do, and so QA procedures tend to be *retrospective*: assuring that appropriate accountability and fire-fighting mechanisms have been working, that money has been well spent.

Quality enhancement, contrariwise, is *prospective*, concerned with reviewing not only how well the whole institution works in achieving its mission, but also how it may keep improving in doing so. QE mechanisms look to the future, ensuring that through appropriate monitoring structures using transformative reflection, teaching and learning will be continually monitored and enhanced, exactly along the lines of formative evaluation for implementing constructive alignment. An effective quality enhancement system pre-empts the need for quality assurance.

Just as transformative reflection by individuals is founded on a theory of teaching, quality enhancement in institutions is founded on a generally held philosophy of teaching: the scholarship of teaching and learning.

The scholarship of teaching and learning

Boyer (1990) introduced the term 'the scholarship of teaching', but in recent years, as the concept has become more and more popular, the term 'learning' has very appropriately been added. In the current concept of 'the scholarship of teaching and learning', or SoTL, lies the recognition that

teaching and learning have their own research and knowledge base, their own *scholarship*, that in most universities not so many years ago was simply unrecognized and still is in many universities. In other universities, SoTL is recognized in mission statements but not in practice, for example when it comes to promotions or appointment.

A genuine SoTL culture leads inevitably to several structures that require and support transformative reflection with regard to teaching.

Teaching and research

Possibly the single most important influence of a SoTL culture in an institution is that teaching is accorded at least the same status and the same traction in personnel decision making as does research. It may do so on paper, but it is still usually the case that the promotion goes to the individuals with most publications, even in universities where the most important function of the university in the public eye, and in its activities, is in fact teaching. This discrimination does not occur only in promotions. Many universities do not allow publications on the teaching of one's own discipline to 'count' either in an individual's CV or in the departmental publications list that is used for funding purposes.

Teaching development grants

Many universities provide teaching development grants to encourage and support innovative approaches to teaching and learning for individual or groups of teachers. The teaching development grants may come from the university's internal funding or from external sources such as the National Teaching Development Grants scheme in Australia, the Higher Education Academy in the UK, and the University Grants Committee in Hong Kong. Allocation of funding to individual projects is usually done via a peer review process of proposals submitted by individual or groups of teachers.

There are advantages and disadvantages to internal versus external funding. External funds are more lavish, but many teachers, not at all intimidated by applying for grants in their content research, are reluctant to apply for funds and go through all that form filling to research their own teaching, because they do not consider themselves educational researchers. Internal funding, with smaller amounts, is not nearly such a hassle. Many teachers, who later did significant research into their own teaching, started small. Universities should not therefore think that because external teaching development funding agencies are out there they needn't bother with an internal funding system. Indeed, many universities that are serious about their teaching take a thin slice from across the main budget and dedicate that to teaching development. It is vital that in encouraging teaching development projects, university-wide policy should be in place to ensure that scholarly publications on teaching should be recognized on the same level as publications in content area research.

Many teaching development projects are action research in nature, authentic to a real-life teaching and learning context, rather than attempts to be representative and generalizable with a tight research design. Typically, teachers or teams of teachers design projects on such topics as curriculum development, constructive alignment, PBL, peer tutoring, clinical and applied learning, independent learning by students, innovative assessment tasks, web-based learning and assessment and various teaching and learning resources. External consultants, or internal departmental resource persons could work together to identify issues and develop project proposals. Teaching and learning development centres (see following section) should also play an important role in coordinating teachers or groups of teachers in identifying and developing proposals on various teaching and assessment issues and to provide ongoing support during the implementation and dissemination of the teaching development projects.

As a general rule, teaching development projects are expected to disseminate their results to the wider teaching and learning community. Many projects have developed their own websites, and organized sharing seminars or thematic conferences to share their project results and insight both within and beyond their respective institution. For example, the following arose from projects funded by the University Grants Committee of Hong Kong:

- the first Asia-Pacific Conference on Problem-based Learning in 1995
- an international conference on Enhancing Teaching and Learning Through Assessment in 2005
- the adoption of constructive alignment throughout the Hong Kong Polytechnic University flowed from another funded project on constructive alignment.

Teaching and learning development centres
Teaching and learning development centres (a generic name covering staff development units, educational development centres and so on) have previously been the poor country cousins in the establishment of universities: they have been underfunded, understaffed and frequently with the staff classified not as academics but as part of administration. What unaligned thinking! If the advisors on academic matters such as teaching are not even classified as academics, it's inviting academics not to take staff development seriously. In the past, too, the main job of the teaching and learning development centres was to provide one-off workshops for teachers on a voluntary attendance basis and to provide service courses on educational technology.

The teachers who attended voluntary workshops were mostly the already good teachers; those who didn't attend were frequently those who most needed to. The effect was to widen the gap between good and poor teachers. The basic problem was that the centres were at best perceived through Level 2 lenses, as places for providing tips for teachers or as remedial clinics for poor or beginning teachers. At worst, they were seen as inessential luxuries and when the hard times in Australia began in the 1990s, many were simply

closed down to save money, an act as sensible as throwing all the doctors off an aircraft to lighten it while the pilot is having a heart attack.

This sorry state of affairs has recently turned around. With the demands from fee-paying students for good teaching, the sudden emergence of SoTL as a Level 3 theoretical basis for teaching, and in UK especially, the provision of compulsory courses for new academics and the establishment of the Higher Education Academy, the perception and role of teaching and learning development centres have changed hugely for the better. It is also being recognized that these centres have a peripheral as well as a central locus. That is, the best work in staff development, as we have found in our experience in implementing constructive alignment, is done from within the unit that provides the teaching, usually the department, when the staff developer is also an expert in the content taught in that department. This is not such a hard call as may appear: after all, a staff developer always comes – or should always come – from a background in teaching a content area; it is simply a matter of allocating staff developers accordingly. Some faculties and schools have their own teaching and learning development centres, particularly in medicine and law.

There is also a central, generic role for these centres. It is self-evident that all central decisions that bear on teaching and learning should involve the experts in teaching, learning and assessment. The design of course and programme approval forms, the architecture of teaching areas, software and hardware requirements of the platform used for teaching, regulations on assessment procedures and the reporting of assessment results are all areas that have direct effects on the effectiveness of teaching and learning. These and related decisions should therefore receive input from the teaching and learning experts.

Teaching developers should *not* be involved as 'teaching police', in assessing individuals and supplying information about individuals on their teaching competence for personnel decisions, such as contract renewal. This utterly compromises their role. The argument is the same as that about revealing error in summative as opposed to formative assessment (p. 97–8). The teaching and learning development centres' role is formative, not summative, and teachers must feel free to expose their weaknesses in teaching and express their doubts. Additionally, there is the issue of professional ethics, that the relationship between any professional person and client is based on confidentiality and on acting in the client's interests. It is deplorable that in some universities the directors of teaching development centres are required to gather such information on individuals for use in personnel decisions.

Teaching portfolios

We came across the use of teaching portfolios in the implementation of constructive alignment, but they are a useful part of quality enhancement generally. A teaching portfolio is a collection of evidence about your teaching and your students' learning, and a self-reflection on that evidence. It is

your own quality enhancement process with the intended outcomes of helping you to:

1 keep a personal record of your teaching practice
2 reflect on your teaching philosophy and practice
3 identify your strengths and areas for improvement as a teacher
4 plan your professional teaching development.

While a teaching portfolio may also be appropriately used as part of the institutional quality assurance process for summative teaching evaluation and other relevant decision making, the formative and summative use of the teaching portfolio should be clearly differentiated. If used summatively, the aims and criteria for assessment of the portfolio should be clearly stated so that the portfolio could be appropriately structured and reflected on accordingly.

Box 12.1 suggests some contents of a teaching portfolio.

Box 12.1   Contents of a teaching portfolio

There is no standard list of contents of a teaching portfolio but it should include a statement of your theory of teaching on which all your teaching decisions are (or should be) based. The following is an indication of the types of evidence you could consider including.

1 Evidence provided by yourself:

- Statement of your personal teaching philosophy underlying your own teaching.
- Teaching qualifications and experience, focusing on your current teaching and other teaching-related responsibilities.
- Achievements in teaching and other teaching scholarly activities, such as: teaching innovations, teaching materials and resources, curriculum development, postgraduate supervision, professional teaching development, action research and teaching-related publications, contributions to enhancement of teaching and learning within the institution, any official recognition of your teaching achievement, such as teaching awards or invitation to present in conferences etc.
- Administrative duties enabling you to promote teaching and learning beyond your own, such as responsibilities as course or programme leader, member of teaching and learning committees, member of teaching innovation group etc.

2 Evidence provided by colleagues, students and others:

- Feedback from peer review from colleagues who have observed your teaching (see peer review below).

- Evaluation and feedback from colleagues on your course materials and content.
- Student evaluation of and feedback to your teaching, additional to the institution's quality assurance process: formal and informal student feedback provided by students during their learning with you, unsolicited emails, correspondence, 'thank you' cards from past and present students indicating their appreciation of your teaching. Pages of raw evaluation data, no matter how positive, should not be included in the portfolio. Summary of the evaluation and your reflection on the results are more informative.
- Evaluation of and feedback on any teaching development activities you have offered.

3 An overall self-reflection on:

- The strengths of your teaching.
- Areas for further improvement.
- Action plan for further professional development.

In the context of implementing constructive alignment, your reflection should focus on the alignment between the intended learning outcomes, teaching/learning activities, assessment tasks and grading, and how the alignment could be enhanced.

All your claims should be supported by concrete examples: your teaching materials, samples of student work, teaching development workshop materials etc., and how your decision making is informed and based on your personal teaching philosophy.

There is no fixed format to a teaching portfolio, just that it should be designed and structured to effectively reflect your teaching achievements and how your students' learning has been affected by your teaching, with reference to the context in which the portfolio is to be used. The portfolio is normally presented as a written document, either in hard or soft copy format, but the electronic format is becoming more common. Appropriate multimedia presentations could be considered such as a video or audio tape of your own teaching with accompanied self-reflection. The teaching portfolio should be a succinct documentation highlighting your strengths, accomplishment and reflection on your teaching, normally no more than three or four pages long. Detailed examples should be included in the appendices and an indication that further details could be available on request. A lengthy portfolio may hide the wood with all the trees – and bore your readers.

Courses in tertiary teaching

Another way in which a university can show commitment to teaching is what many universities are already doing in the UK at least: require all new staff to attend a course on teaching. The Higher Education Academy is now accrediting all such courses. This means that new teachers, having undergone staff development or teacher education, will be entering the profession with some knowledge of the student learning approach and a Level 3 theory.

The value of such courses is anecdotally attested to by the following comment in response to an enquiry we put to a teacher in one UK university: 'Whenever we propose or update a course we need to fill in a form in which we specify up to five learning outcomes. When we list the different pieces of assessment, we have to say which learning outcome each assessment assesses. Not sure how reflective people are in filling out the form. Some take it seriously – mainly those who took a teaching course we now require for starter lecturers' (Zoltan Dienes, private communication).

Such courses thus have excellent potential for bringing about a culture change in universities, based on the scholarship of teaching and learning. It should be standard practice outside the UK. Now that in most universities teaching is the major activity for most staff, and the expectation of stakeholders in the general public, it seems strange that people should be allowed into this high-level profession who are effectively unqualified to carry out a major part of their duties.

Peer review of teaching

The primary purpose of peer review is to provide formative feedback for continuing professional development of individual teachers. A teacher invites a colleague, a critical friend, to observe his/her teaching and/or teaching materials to provide feedback for reflection and improvement: in effect a QE process through action research of your own teaching. Peer review should form a major part of the overall teaching quality enhancement process, but only peers should be involved, not those in a position to make personnel decisions. Peer review has been used for summative evaluation as part of the institutional quality assurance process to satisfy external quality audit bodies, but as always, the formative and summative use of peer review must be clearly differentiated and agreed on by individual teachers. When used for summative purpose for personnel decision making, clear aims, procedures, guidelines, and assessment criteria must be stated and agreed by all parties concerned.

Box 12.2 gives an example of some conditions for effective formative peer review.

Peer review should include the following four stages:

1 Pre-review meeting between the reviewer and you (the reviewee) to discuss purpose and intended outcomes of the review, type of feedback that would be helpful to you and to make logistic arrangements. The focus of the review should also be clear: What specific aspects of your teaching you

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Box 12.2   Some conditions for effective peer review (PR) of teaching for quality enhancement

Following are some of the issues to be observed for effective PR:

1 The purpose and the intended outcomes of the PR exercise should be clearly defined.

2 It should involve all types of teaching staff (part time, full time, contract and tenure).

3 Participation must be voluntary.

4 The reviewee should be given the choice of:

   a his/her reviewer
   b which classes to be observed or what teaching materials to be reviewed
   c the focus of each review session
   d use of review feedback for other purposes such as an application for promotion
   e who should have access to the review report.

5 Staff development should be provided for both reviewer and reviewee.

6 All feedback should be returned to the reviewee and used for developmental purposes only.

7 Appropriate support provided to reviewee to enhance further improvement.

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want to receive feedback on – are you trying a TLA to enhance student participation in a lecture situation and would like to have feedback from your peer as to the effect? Would you like to have peer feedback on a new e-learning package you have developed?
2 The actual review usually involves a real-time teaching session. Students should be informed why an extra person is present in the classroom. The reviewer should be non-intrusive to the teaching and learning process. It is useful for both parties together to review a videorecording of the teaching session. A checklist or feedback proforma is useful for feedback purposes (see 'Further reading'). The review can also involve reviewing teaching materials or resources.
3 Post-review meeting. Reflect on your teaching before the post-review meeting to identify any issues that you would like to discuss. During the meeting, feedback is provided for further discussion and maybe clarification. Feedback should be specific addressing the previously agreed focus

and supported by evidence. It should be constructive providing suggestions for reflection and improvement. Further review could also be arranged if appropriate.

4 Post-review reflection by yourself based on the feedback to identify areas for improvement and to develop an action plan for future changes. Keep the review report in your teaching portfolio for record and future reference.

Other structures at departmental level

Departmental teaching and learning committee

One of these, with student representation, should be established to make on-the-ground decisions relating to the setting up, design and administration of courses and programmes, to monitor teaching, define problems and benchmark with other similar departments locally and overseas. Such decisions should be made on the scholarship of teaching and learning, and to that end, a member of the university's teaching and learning development centre should be present to advise.

This committee might, for example, review deviations from expectations as to the annual grade distributions and remedies proposed. Out of this, too, can come ideas for action research at a departmental level. It is important to keep track with data that reflect change, such as student feedback, samples of student learning outcomes, staff reports, performance statistics and so on, which is kept in departmental archives. The work of this committee could give rise to action research projects within the department. Operating at the departmental level means that the problem of the reluctant under-performing teacher is drastically redefined. *Teaching* is now the focus, not the problems that *individual teachers* might have.

Regular departmental 'sharing sessions'

This is where staff can tell each other what is working for them and what is not working. Alternatives that achieve better alignment may be explored, by pooling colleagues' ideas and by consulting the teaching and learning development centre and the departmental committee. A genuine sharing of problems and solutions through the lenses of constructive alignment can lift the game of the whole department.

Student feedback on teaching

This should be organized through the department, not the faculty or central administration. Questionnaires should be worded to be supportive of constructive alignment: for example, are students clear about the ILOs, what standards they have to reach to attain the various grades, that the TLAs in their experience really help them to achieve the ILOs.

Staff–student consultative committee

Here, students and staff can share views about the quality of their learning experiences. Focus groups might be organized and students might be asked to submit what they think are their best performances, to be placed in departmental archives as exemplars of good learning.

Research and teaching

The head of department should give strong encouragement to teachers to research and publish in teaching their content area, as well as research in the content itself.

A regular departmental retreat

Held at least annually, this is where teaching-related matters are top of the agenda.

Some marginal quality assurance procedures

Some mechanisms, in place in the name of quality assurance rather than of quality enhancement, can backfire, as they discourage risk taking and innovation.

External examiners

External examiners in the British system are a time-honoured means of ensuring that similar standards operate across institutions. It is important to bring outside perspectives and contacts to bear and to feel confident that one's own standards are comparable to those elsewhere.

Frequently, the role of external examiner is restricted to examining the setting and marking of final papers and to adjudicate the summative assessment of students. The person doing this needs to be completely aware of, and in sympathy with, the department's theory of teaching. We know of cases where the examiner required the examination questions to be changed well into the teaching of the course concerned – and thereby putting alignment at risk. External examiners, selected for their content rather than for their educational expertise, may discourage innovative assessment practices and encourage decontextualized assessment. The pressure to comply with the external examiner is considerable in institutions where the examiner's comments are seen and discussed outside the department concerned. However, if the word 'examiner' is replaced with 'consultant', an outside advisor who can visit the department to advise on assessment and other matters to do with teaching and learning, the problem is solved.

External panels

External panels are often required to accredit and validate programmes and courses. This is a common quality assurance procedure that has obvious

value, particularly where staff are required to deliver new courses in directions in which they may have had little experience, in which case course accreditation helps to ensure minimal standards. A similar argument applies to programmes that require approval by external professional bodies. Both procedures, however, discourage innovative teaching, although recently professional bodies increasingly require outcomes-based teaching for accreditation purposes.

External panels may well exert strong pressure to include more and more content. Each panel member thinks his or her own special interest must be given 'adequate' treatment – which is code for rather more treatment than is being proposed – a common result being an overloaded curriculum. Programme leaders and committees usually anticipate such pressures – they obviously design courses that they think are likely to be approved – and so the curriculum is overloaded from the start. Teaching subsequently becomes a frantic scramble to 'cover' all the listed topics – yet we know that coverage is 'the greatest enemy of understanding' (Gardner 1993: 24).

Panels may encourage conservatism in teaching, particularly when the panel has key figures from the profession whose knowledge of education is what they went through years ago in their own professional training. So it is easy to anticipate problems and err on the cautious side: 'Let's get the validation over first, then we will innovate as much as we like!'

Once a course has been approved, however, it tends to be set in concrete. Changing an already validated course or programme can be difficult. It may easily turn out that the curriculum is indeed overloaded; that the student intake has changed; that recent research, post-validation, suggests that the curriculum should be changed. It may be possible to make minor modifications immediately, but any major changes are either not allowed, because they were not in the validated documents, or they have to go through yet another round of committees. Administrators usually discourage any attempt to do so. In one institution, a move to PBL was vetoed by a senior administrator: 'The course may have to be revalidated. What if it doesn't succeed? What then, eh?'

Teaching evaluation

Teaching evaluation may follow one of two methods that exactly parallel the measurement model and the standards model (pp. 170–8). Evaluating teachers by a single instrument, such as a student feedback questionnaire, is operating according to the measurement model. Such instruments are worded to apply across all departments so that teachers can be compared along a quantitative scale, for promotion, awards, contract renewal and the like. This is a common approach to evaluating teaching, even in institutions that are otherwise quite innovative. It is an excellent example of misalignment. Such across-the-board measures assume that the default method of teaching is lecturing; the students rate the teacher on such items as 'speaks clearly', 'hands out clear lecture notes' and the like. This can be a serious impediment to reflective teaching. A teacher using a range of well-aligned

TLAs automatically gets a low score – and is passed over for promotion. Back to lecturing it is! We have seen it happen in several institutions; it would never happen in an institution running on the scholarship of teaching and learning. Teaching evaluation *à la* measurement model is an example of administrative convenience overriding educational sense (see Figure 12.3, p. 276).

Teaching should be evaluated using the standards model. That is, there are several criteria for good teaching and the teacher's task is to provide evidence that addresses those criteria, with evidence from a range of appropriate sources collected in a teaching portfolio (see earlier), where a teacher outlines his or her philosophy of teaching and then demonstrates how that is put into practice with samples of teaching and student evaluations specifically tuned to particular courses.

Distinguished teacher awards

Distinguished teacher awards frequently raise similar concerns if they are awarded on the basis of scores to such teaching evaluation questionnaires. But that aside, there are still worries. The message is: 'See? We reward good teaching in our institution!' – and it is indeed good to reward people for doing an outstanding job. However, it has to be done carefully, otherwise the message to the great majority of teachers – by definition the undistinguished ones – is that distinguished teachers are born, not made. The very names 'distinguished teacher' or 'outstanding teacher' suggest that here we have a bird of a rare species, whose exotic plumage ordinary teachers cannot hope to match. The sparrows and starlings therefore cannot be blamed if they follow what nature intended and teach on in their own undistinguished way. A generous distinguished teacher award system may also have the effect of absolving management from further support for teaching development.

Distinguished teacher awards encourage the perception that an outstanding teacher is one who does teacherly things better than other teachers do. Therefore, while distinguished teachers themselves tend to operate from Level 3, as reflective practitioners (Dunkin and Precians 1992), formal awards promulgate a Level 2 view of teacher as performer. Reward the excellent teachers by all means, but if we want quality teaching at an institutional level, the focus should not be on what the individual teacher does, but on the *teaching system* in the university. Recipients of awards may have nothing to do with all that crucial developmental teamwork – curriculum development, tutor mentoring, decisions as to delivery and assessment – that makes it possible for the star teacher to strut his or her stuff.

A revealing slant on this issue of individual versus collective responsibility for teaching comes from an international comparison of mathematics teaching carried out by Stigler and Hiebert (1999). They analyzed videotapes of classroom teaching in three different countries and found that each culture developed its own 'script' for teaching. Japan had a script based on a Level 3 theory of teaching, while the US script was based on learning routines at Level 1. Not surprisingly, Japanese students achieved better results than did

American students. But what determined the Japanese learning outcomes was the script, not the particular actor who delivered it. Awarding Oscars to the actors is not likely to improve their scripts. Just so in quality enhancement; we should be focusing on the script, not on the actor. Distinguished teacher awards, like quality assurance itself, are retrospective; they focus on what has been done; they do not make teaching across the board better in future: it is not quality enhancement.

By contrast, let us look briefly at awards in the Chinese school system, which might better be called distinguished teach*ing* awards:

> Good teachers may be honoured with titles (and salary bonuses). Such titles are awarded after they have been observed and have given demonstration lessons in a competitive situation, at one to three days' notice, in front of tens or hundreds of their peers ... The teachers ... act as mentors to younger teachers and their mentoring role includes giving further demonstration lessons.
>
> (Cortazzi and Jin 2001: 121)

Good teaching is seen here as a collective responsibility that works *prospectively* to enhance future teaching in the institution or district.

Now why don't we in the west do that?

Student feedback questionnaires

Many institutions have mandatory student feedback questionnaires as summative evaluations at the end of each course, using standard questions across all courses. We have already discussed the difficulties with that. Additionally, student feedback questionnaires share with distinguished teacher awards the problem that they usually focus on the actor, not on the script. They tend to measure charisma, the Dr Fox Effect, not teaching effectiveness in terms of improved student learning (see p. 108). Used formatively, however, student feedback questionnaires make eminent sense where questions are tailored to specific courses on aspects on which feedback is required as in the formative evaluation of implementing constructive alignment (pp.260–1).

In short, some common quality assurance procedures have the opposite effect to that intended, conceived as they are within a retrospective framework. While the above procedures may be well meant, if two edged, other institutional aspects are unequivocally negative.

Negative impacts on Level 3 teaching

Throughout this book, we have continually referred to counterproductive procedures and policies. The following is a brief recap.

Distorted priorities

Distorted priorities are a major source of mis- or non-alignment. Probably all

institutions would put educational considerations as their top priority in their mission statements. However, there is an institution to run, which generates a set of administrative priorities. Administrators want things to run on schedule; they want to ensure that plagiarism cannot occur, that public criticism about standards or fairness should be avoided, that awkward cases are anticipated and legislated for before they arise and cause trouble, that research is promoted over teaching because the university's prestige is based on research output and so on.

For all this to happen (or not to happen), the safest working assumption is that students, and more recently teachers, are not to be trusted; the answer is to establish a Theory X climate. Unfortunately, as we saw in Chapter 4, good learning thrives in a Theory Y climate. However, as a completely Theory X climate would be unbearable and a completely Theory Y climate unmanageable, we compromise (see Figure 12.3).
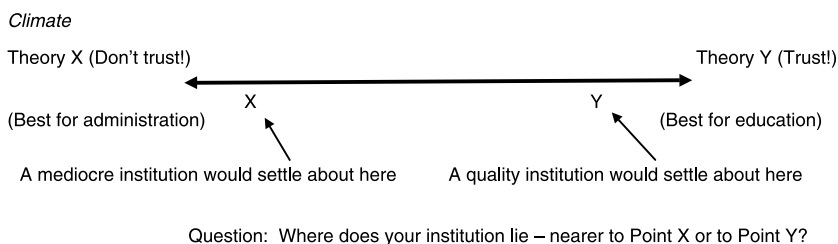

Figure 12.3   Administrative and educational needs – striking the right balance

How the two sets of priorities are balanced is what separates a quality institution from a mediocre institution, in terms of teaching and learning. A quality institution is biased towards establishing the optimal conditions for learning (point Y), a mediocre one towards administrative convenience (point X). Where does your institution lie?

What sort of things distort priorities?

A quantitative mindset

Quantitative assumptions reduce complex issues to units that can be handled independently, rather than as part of the larger interactive system to which they belong. Thus, the curriculum becomes a collection of independent competencies, basic skills, facts, procedures and so on; passing becomes a matter of accruing sufficient independent correct answers.

A particular problem is the misapplication of the measurement model of assessment. Table 12.1 summarizes.

The demands of the measurement model are simply incompatible with those of good teaching.

Norm-referenced assessment

A particular example of quantitative assessment is norm-referenced assess-

Table 12.1 Demands of the measurement model and those of good teaching

Measurement model	Good teaching
Performances need to be quantified, so they are reduced to correct/incorrect units of equivalent value that can be added	Students need to learn holistic structures that cannot meaningfully be reduced to units of equal importance
A good test creates 'a good spread' between students, preferably normally distributed	Good teaching produces reduced variance
The characteristic being measured is stable over time	Good teaching produces change: it is called 'learning'
Students need to be tested under standardized conditions	Students need to be tested under conditions that best reveal an individual's learning

ment, in particular grading on the curve. We might decree that the top 15% of graduates will achieve first class honours and then boast 'See here, all our departments are teaching to the same high standard!', but that is an illusion. We have no idea of the real standards reached by any department. Worse, grading on the curve makes aligned assessment impossible.

Invigilated examinations

These are hard to justify educationally, but are useful logistically and for assuring the public that plagiarism is under control.

Who teaches the first years?

Assigning the most junior teachers, who can't argue back, to teach those enormous first-year classes that the senior teachers don't want to teach is not according to the scholarship of teaching and learning.

Emphasize research at the expense of teaching

Although many universities officially place equal emphasis on teaching and research, research is almost invariably perceived as the activity of greater prestige and in promotions is rewarded more than is teaching. Some department heads do not even recognize publications on research into teaching the very subject the department is charged to teach as 'real' research.

In sum, impediments to quality teaching and learning result from poor alignment to the purpose of the institution, just as impediments to good student learning result from poor alignment of teaching/learning activities and assessment practices to ILOs. Quality teaching means trying to enact the aims of the institution by setting up a delivery system that is aligned to those aims. In practice, however, many institutions in their policies, practices and

reward systems actually downgrade teaching. Some of this is externally imposed, ironically by some aspects imposed by quality assurance procedures. Other practices fall into the category of institutional habits; it's always been that way and it does not occur to question them.

Whatever the reasons for their existence, any adverse effects they might have on teaching and learning need to be identified and minimized. Task 12.1 is designed not for teachers but for administrators: heads of department, deans, DVCs.

Task 12.1   Do your quality assurance processes encourage or discourage aligned teaching?

Reflect on current quality assurance processes: are they encouraging or discouraging the implementation of constructively aligned teaching and learning?

You as head of department/dean of faculty:

QA procedures encouraging	*QA procedures discouraging*

On reflection, what changes would you make?

_____

_____

You as senior management (e.g. DVC, chairman of quality assurance committee) of the university:

QA procedures encouraging	*QA procedures discouraging*

On reflection, what changes would you make?

_____

_____

_____

Now some tasks for teachers. There were two tasks in Chapter 3 that we should now revisit as Tasks 12.2 and 12.3.

Task 12.2   Follow-up of Task 3.3

In Task 3.3, we asked you to reflect on a critical incident in your teaching/assessment and how you dealt with the problem then. Let us say you are faced with a similar incident now, after having read this book thus far. Consider it in terms of the following questions:

a What do you think is the problem? What has gone wrong? What is the evidence for a problem?

_____
_____
_____

b What is (are) the cause(s) of the problem?

_____
_____
_____

c How would you deal with the problem now?

_____
_____
_____

d What is the difference between your present answers here and your previous answers? Compared with Task 3.3, what change have you made in dealing with the problem? Why have you made such changes?

_____
_____
_____

Summary and conclusions

A framework for implementing constructive alignment

So far we have been discussing the framework of constructive alignment as a means of rethinking familiar decisions about curriculum, teaching and assessment. We now need a framework for implementing it. Teachers, students and the institution need to reflect on their domains of interaction: teacher and students, teacher and institution and students and institution. Although ILOs, TLAs and ATs have been put in place, arrangements must be made for feedback from all parties to gauge how implementation is proceeding and what adjustments might need to be made.

Task 12.3   Follow-up of Task 3.4

In Task 3.4, we asked you to identify the *three most worrying* problems in teaching a semester- or year-long unit; one that you would realistically hope to minimize by reading this book. What actions will you take to address these problems after reading this book so far?

1 _____
   _____
   _____

2 _____
   _____
   _____

3 _____
   _____
   _____

What is the theoretical basis for your actions?
_____
_____
_____

Revisiting transformative reflection

The mechanism underlying successful implementation is transformative reflection, which is a cyclical process, using theory to analyse problems and to derive solutions and test them. This is known as reflective practice as used by individual practitioners, but exactly the same process applies to individuals on committees and in leadership roles.

Implementation in the individual classroom: Teacher and students

Once a teacher is committed to trying constructive alignment in a course, the main problem of implementation is to mould its shape so that it fits the procedural and collegial requirements of the institution: assessment regulations are likely to be the most constraining. Action research, using reflective practice, is a good paradigm for achieving the best fit. It is important to systematically collect evidence as to progress, both from the students' and from your own perspective and to use a 'critical friend' to help in transformative reflection. This friend reappears in the peer review of teaching.

Implementation at institutional level: Teacher and institution

Implementing constructive alignment over a range of courses across a department or faculty is obviously more problematic than in one course. Good leadership is essential. There are many leadership roles that may be filled by different individuals, some by committees: to make the decision to 'go ahead' without deferring to sceptics, to summon the necessary resources, to provide the necessary pedagogical expertise; to grip the right political elbows, to conduct the implementation orchestra. Equally important is to set up formative evaluation, as in the case of implementing courses.

Implementation at institutional level: Student and the institution

The third interface is between the department or institution and the students. Students need to be represented on all committees dealing with teaching and learning and to provide feedback on department-wide implementation. Students at this level are a useful source of feedback on an aspect that may not arise in course implementation: graduate attributes. Also their feedback on general courses, such as the *Course Experience Questionnaire*, is particularly useful here for comparative purposes. Students would also find it helpful to have a suitable induction into constructive alignment, with inputs from students who have been there before.

The reflective institution

The implementation of constructive alignment raises issues that apply to quality assurance and quality enhancement measures for the whole institution. Such measures should be founded in the scholarship of teaching and learning, involving staff development, continuing formative evaluation and policies and procedures for recognizing quality teaching and learning as an institutional priority. This way, teachers' conceptions will move towards Level 3 and they will teach with conviction and a sense of priority.

Further reading

On reflective practice

Brockbank, A. and McGill, I. (1998) *Facilitating Reflective Learning in Higher Education*. Buckingham: Society for Research into Higher Education/Open University Press.

Cowan, J. (1998) *On Becoming an Innovative Teacher*. Buckingham: Open University Press.

Schon, D.A. (1983) *The Reflective Practitioner: How Professionals Think in Action*. London: Temple Smith.

Schon's book deals with the whole question of improving professional practice by reflection, using examples from several professions. The other two books refer specifically to university teaching. Brockbank and McGill provide detailed help in setting up situations (based mainly on the Schon model) to promote reflection with colleagues and on one's own teaching, with respect to promoting student learning and formal action learning projects. Cowan distinguishes several kinds of reflection, how teachers can best use reflection, how teachers can encourage their students to reflect and how to structure groups and reflective learning journals in ways that best promote the appropriate kind of reflection. The book is driven by a cycle of questions, examples, strategies and generalizations from the examples.

On action research

Gibbs, G. (1992) *Improving the Quality of Student Learning*. Bristol: Technical and Educational Services.

Kember, D. (2000) *Action Learning and Action Research: Improving the Quality of Teaching and Learning*, London: Kogan Page.

Kember, D. (2001) Transforming teaching through action research, in D.A. Watkins and J.B. Biggs (eds) *Teaching the Chinese Learner: Psychological and Pedagogical Perspectives*. Hong Kong: University of Hong Kong Comparative Education Research Centre/Camberwell, Victoria: Australian Council for Educational Research.

Kember, D. and Kelly, M. (1993) *Improving Teaching through Action Research*. Green Guide No. 14. Campbelltown, NSW: Higher Education Research and Development Society of Australasia.

Gibbs's book describes several strategies for deep learning and 10 action research case studies in British tertiary institutions in which one or more of these strategies were used. Kember (2000) or Kember and Kelly (1993) describe how action research may be implemented and Kember (2001) describes a number of particular action research projects conducted in Hong Kong tertiary institutions.

On graduate surveys

Australian Graduate Survey (AGS): http://strategic.curtin.edu.au/ags.html

Examples of graduate survey questionnaires: University of Illinois: http://www.pb.uillinois.edu/dr/gs/ University of Washington: http://72.14.253.104/search?q=cache:DWc1HZI4OSwJ:www.washington.edu/oea/pdfs/reports/OEAReport9808q.pdf+%22graduate+survey%22&hl=en&ct=clnk&cd=98&gl=au

On teaching portfolios

http://ftad.osu.edu/portfolio/
www.city.londonmet.ac.uk/deliberations/portfolios/ICED_workshop/
    seldin_book.html
Samples of teaching portfolios from different disciplines: http://Wings.buffalo.edu/
    provost/cltr/files/teaching_portfolio.htm#portfolio_guidelines www.wsu.edu/
    provost/teaching.htm
Electronic   teaching   portfolios: http://electronicportfolios.com/portfolios/
    site2000.html http://eduscapes.com/tap/topic82.htm

On peer review of teaching

www.edna.edu.au/edna/go/highered/hot_topics/cache/offonce/pid/960   under
    Teaching – Peer review of teaching.
Review proformas used in different teaching/learning situations from the University
    of Tasmania: www.utas.edu.au/tl/improving/peerreview/

Other resources

www.unisanet.unisa.edu.au/learningconnection/staff/practice/
    evaluationpeerreview.asp
http://www.utexas.edu/academic/cte/PeerObserve.html

On the scholarship of teaching and learning

Carnegie Academy for the Scholarship of Teaching and Learning (CASTL) Campus
    Program with the American Association of Higher Education (AAHE). http://
    www.sotl.ilstu.edu/
The Journal of the Scholarship of Teaching and Learning http://www.iupui.edu/~josotl/
    Google 'Scholarship of teaching and learning' or 'SoTL' and you'll get all
    you'll ever need to know about contacts, conferences, and journals.

13

Constructive alignment as implemented: Some examples

In this chapter, we present examples of constructive alignment in action from several institutions. First, we present a faculty-wide implementation of constructively aligned courses illustrating the principles of implementation discussed in Chapter 12. We then present courses in several different areas: veterinary science, accounting, engineering, information systems, management sciences and nursing. These courses are recent implementations of constructive alignment, designed within institutional resourcing, policies and procedures and with ongoing quality enhancement. They are produced here with the permission of each course designer. The formatting and method and extent of implementation are quite varied: some, for example, using quantitative, and others qualitative, methods of assessment and grading; some specifying quite precisely the alignment between ILOs and their associated teaching/learning activities and assessment tasks; others using a more holistic alignment. This diversity is excellent, as it shows that there is no one way of implementing constructive alignment. Transformative reflection is carried out realistically within each individual teacher's interpretation of the concept of alignment and according to his or her own zone of feasibility.

A faculty-wide implementation*

In 1997, the Faculty of Veterinary Science, University of Sydney, was in poor shape. It was suffering from a steady decline in government funding, the culture was disintegrating and lacked direction, students complained about teaching that was 'didactic and uninspiring'. There was a call for it to be amalgamated with two other small faculties.

_____
* Source: Taylor and Canfield 2007.

That call for amalgamation was the wake-up – together with the internal appointment, in 1998, of a visionary dean who was determined to turn a bad situation around. He organized meetings with the then 55 (now approximately 70) academic staff members and a range of stakeholders – students, the veterinary profession, industry and key university personnel – who made clear their comments and criticisms of the faculty. It hurt, but putting all that together showed a way forward.

The first thing to be changed was the culture of the faculty. The plan was to make it more outwardly focused, receptive to the needs of students, the profession and funding/industry bodies and to place it on a growth trajectory for sustainability. The leadership became distributed, with staff being given greater responsibility for teaching decisions; teaching was to be more student-centred, a move that coincided with a university-wide initiative in 2000 to support innovation and install quality enhancement systems. Staff agreed on a new goal: 'A shared culture of excellence and scholarship in teaching and learning.' There were three interacting principles to guide implementation of the new student-centred curriculum:

1 Professionalism in education, involving the shared leadership in the newly restructured faculty, with rewards for teaching and support in staff development.
2 An innovative constructively aligned curriculum based on teaching scholarship.
3 Quality enhancement, through a culture of continuous improvement based on evidence gained in particular from action research.

Supporting professionalism

The decision was made at the start to use an across-the-board approach, rather than focus on a few innovators and work out from them. This is not the usual approach (p. 258). However, the dean's change strategy was to build and articulate a new culture with shared values and a sense of a cohesive identity as a faculty, a strategy that the staff strongly supported. The dean used the distributed leadership model to spread responsibility personally among the staff. Departmental boundaries were removed so that teaching was organized by faculty teams not from the old departments and cross-disciplinary units became easily feasible. External facilitators conducted workshops on leadership and teamwork to make the new structure work effectively and for colleagues to feel secure with collegial support yet free to think laterally and share ideas.

Professionalism was supported by rewards for good teaching, small teaching development grants to focus on innovative teaching, aligning the new curriculum to graduate attributes. Professionalism in teaching was progressively increased by staff development activities and numerous workshops and by recruitment. New staff were appointed on their interest in student-centred

learning and their willingness to undertake formal training in education. By 2006, a third of the staff had qualified for the graduate certificate in educational studies (higher education).

Scholarly teaching

The curriculum was completely reconstructed. The old departmental subjects were replaced with integrated units drawing from several subject areas with a strong case-based emphasis. Timetabled teaching was reduced by 25%, the final year being a lecture-free zone, using experiential learning in professional placements. All teaching was designed to be constructively aligned, using graduate attributes to provide a framework for the whole curriculum. Large class teaching was held to a maximum of 50% of teaching time and was mostly less than this, thus allowing a greater range of TLAs including e-learning, case-based learning, placements and practical classes.

Pains were taken to create a Theory Y climate. As one student commented: 'You feel welcome and invited to contribute to all aspects of the faculty and they seem genuinely pleased about feedback.'

Quality enhancement through evidence-based teaching

Quality enhancement procedures involved action research by staff members with frequent, ongoing data collection and constructive reflection on evidence obtained that might throw light on the quality of teaching and learning and how it might be improved. Sources of evidence included: students, graduates, staff and the university. Agreed minimal levels of performance focused attention on struggling courses and additional resources used to improve performance. Staff development workshops and external consultants were used as needed. The teaching and learning quality enhancement exercise was overseen by the faculty learning and teaching committee and there were also quality enhancement initiatives in research and clinical practice.

What is the evidence for the success of the innovations? The *Student Course Experience Questionnaire* scale scores rose steadily from year 2000 and in 2005, the faculty obtained highest or second highest score in the university in five out of the seven scales. In the years 2000–2006, 25 staff had received teaching awards, while in the preceding seven years, none had. One of the spurs to this dramatic achievement was the decision to seek, and in 2005 to obtain, North American accreditation, which became a 'catalyst for transforming the local curriculum into one that had global acceptance and relevance'.

On a norm-referenced note, the faculty is today one of the leading veterinary and animal science schools in Australia, with a great increase in student demand and a correspondingly high admissions index. This was not,

however, at the expense of research. On the contrary, in the warmer, task-oriented search for excellence in teaching, the indicators for research excellence also increased: publications, research monies relative to the rest of the university and numbers of successful research students while the ratings by research students for supervision, infrastructure, research climate etc. rose from worst in the university to best during the period in question.

Taylor and Canfield (2007) saw the following factors as important in helping to establish and sustain the goal of scholarly teaching:

1 inspirational leaders and effective strategic planning
2 commitment to shared leadership for student-centred learning
3 agreed faculty culture inclusive of all staff and students
4 engagement of external stakeholders in curriculum reform
5 curriculum alignment with graduate attributes
6 curriculum evaluation and accreditation for quality enhancement
7 enabling and supportive structures in faculty and university
8 innovation and research into student learning.

Comment

This astonishing success story shows what can be done with the leadership, the will and the commitment to the scholarship of teaching and learning. The overriding principle is *alignment*: every decision made has to conform to the culture established to implement constructive alignment. It is highly significant that the university as a whole was also committed to student-centred learning and was able to come up with the support structure needed in terms of staff developers, policies and procedures.

This is a textbook example, with one apparent exception, of the principles of implementation outlined in Chapter 12:

1 *Strong and committed leadership* and the thorough commitment of all staff (pp. 256–7). A few of the older academic staff did not share this commitment at first: some took early retirement, to be replaced by younger staff who did commit to the faculty goal; remaining doubters simply joined the teaching teams and were swept along with the general flow – and in due course became converts.
2 *Theoretical basis to the change* was there from the start: the scholarship of teaching in general and constructive alignment in particular when it came to course design. It was this SoTL theory that allowed the transformative reflection following the bad experience.
3 *Formative evaluation* was built in from the start and orchestrated by a teaching and learning committee. Staff contributed too with their own teaching development projects.
4 *Strategies for change.* The one apparent exception to the principles raised in Chapter 12 was Fullan's recommendation that one starts small and works outwards, based on successes (p. 258). The present decision to go full on across the whole faculty was a bold one, but given that the *status quo* was non-viable, and the faculty was totally restructured around the central

goal to establish 'sustainable, scholarly teaching', this was in the event the right decision.

5 *Change teachers' conceptions first or make them teach differently first?* Here, teachers were required to teach differently, but the reasons, the theory underlying the change, were always upfront. The general answer to this point again lies in the climate created. Teachers weren't just ordered: 'You teach differently!' A rich context was provided in which the difference in teaching from what most were used to, to what was required was fully supported by both physical resourcing and by a change in climate of thinking about teaching.

6 *The faculty climate* was thus a vital part of this context: a supportive Theory Y climate in which both staff and students felt mutual responsibility.

The fact of this transformation in the space of five years from one of the struggling to one of the best institutions for preparing veterinarians and animal scientists in Australia must allay any doubts that constructively aligned teaching is impractical.

Veterinary science

Our first example of an aligned course is from the faculty we have just examined. 'Animal Structure and Functions 3A' (ASF3A) is a second-year course of a four-year degree programme of BAnVetBioSc at the University of Sydney. The number of students in the course in 2006 was 78. The course was designed by a team, the details supplied by Dr Rosanne Taylor and Dr Melanie Collier.

Course aims

The aims of this course are that students will integrate knowledge of structure (anatomy) and function (physiology) and draw on concepts introduced in Animal Science 2 to build their understanding of key systems that are integral to the maintenance of internal homeostasis. These concepts provide a basis for investigating the effect of genes, biotechnology, nutrition and reproductive changes on animal function and production in year 3 units.

Intended learning outcomes (ILOs)

On completion of this unit students will be able to:

ILO1 *Analyse* the contribution of hormones to maintenance of internal homeostasis in animals

ILO2 *Critically analyse* applied animal physiology research articles

ILO3 *Advise* how the natural mechanisms animals use for defence from

foreign molecules and organisms can be manipulated to confer immunity

ILO4 *Advise* on animal management practices that meet the physiological needs of animals (considering the animals' sensory structures, central processing, autonomic and motor responses)

For purposes of illustration, we show alignment of the TLAs and ATs for ILOs 2 and 4 only.

Teaching and learning activities (TLAs)

TLA1: Critical review

The students undertake a critical review of two recently published research papers on pain/welfare/research in animal husbandry/slaughter. They are encouraged to make their own choice as to topic. The specific ILOs of the critical review are that students will:

1 critically evaluate scientific literature
2 relate the principles of neural processing to analysis of animals' responses to husbandry procedures
3 use the structure and characteristics of good scientific writing
4 provide constructive feedback on scientific writing of peers.

It is intended that undertaking this task will develop and demonstrate students' knowledge of central neural processing, sensory processing, pain and consciousness and provide an opportunity for students to integrate and apply these principles to assessment of humane animal husbandry and slaughter methods. As the task is completed, students will also develop key graduate attributes for animal and veterinary bioscientists in information retrieval, information management, critical analysis, written expression and animal welfare, attributes that will be further developed and assessed in their final-year honours/research project. The peer-assessment component provides an opportunity to reflect on their own scientific writing, to develop skills in editing and commenting on the work of peers and to improve on the quality of their own written work prior to final submission.

The students are prepared for the review with a tutorial on scientific writing to dissect and analyse a published paper and a class on how to critically review literature, which is supported by documents and a website showing students how to conduct their own critical review. A literature searching session with the librarians helps students learn how to find and to evaluate other sources of information that may be useful.

TLA2: Peer review

Students are required to review a critical review of their peers. The topic reviewed is completely different from the one they investigated in order to increase their appreciation of the other work in the field.

Students use grade descriptors and criteria to provide constructive feedback to their peers on a proforma by the following week. They frequently write several pages of useful suggestions and feedback on the hard copy (this is very popular with their peers) in accord with grade descriptors in the unit handbook:

1 purpose of research
2 selection and approach
3 quality of evidence
4 conclusions
5 general comments on format, word limit, grammar, spelling
6 suggested mark (/20)

One week later the students submit their revised critical review. The teacher sees the original, student comments, papers and the final submission. Only the final submission is marked; the earlier versions and comments give feedback to students on how they have improved their work to let the peer reviewers know that they have provided good constructive advice.

Assessment task (AT)

Critical review of research papers
(Addresses ILOs 2 and 4.) The critical review used in TLA1 forms part of the assessment of the course. The students are given a list of papers and are encouraged to make their own choice depending on their interest. This task encourages them to read more widely and to include some reviews and alternative perspectives. Feedback from the teachers is provided to students on how their works have improved. The critical review is worth 20% of the course, which is 6/24 credit points of one semester of the whole programme.

This assessment task is the only time where ILO2 is assessed in this unit. ILO4, as broader and encompassing several topics, is also assessed in other ways, including a written examination and project. The grading criteria are based on a combination of students' application of scientific knowledge in their evaluation of the work, as well as their ability to express their ideas effectively in the scientific critique.

Grading criteria for the critical reviews are provided to students in the handbook and are reproduced in Table 13.1.

Online resources

http://www.deakin.edu.au/studentlife/academic_skills/undergraduate/handouts/
    crit_analysis.php
http://eebweb.arizona.edu/courses/Ecol437/reading1.pdf

Table 13.1 Grading criteria for the critical review of literature in veterinary science

Grade	Introduction/literature review
High distinction or mastery 85–100%	The report represents work of an exceptional standard: • is a highly articulate and professional document • includes complex critical comments with extended justification (and appropriate referencing) in all sections that reflect an applied and transposable understanding of key issues • demonstrates initiative and originality in analysis or interpretation Comprehensive and highly professional: • shows a high level of thought, knowledge and reflection • student is able to relate material to other knowledge domains • review critiques literature well, incorporating many sources to develop an argument with little to no summarizing of previous work • may resolve theoretical and/or empirical problems and show evidence of creative or innovative conceptualization • discussion is integrated into a logical, coherent whole: 'tells a story' and leads logically into research proposed • creates a sense of mastery of literature and relevant technical issues
Distinction or high level of achievement 75–84%	The report is of a superior standard: • is well written (as in credit) and free of errors • includes coherent critical comments with substantial justification (and appropriate referencing) in all sections that reflect an integrated understanding of key issues • provides evidence of broader appreciation of the relationships between key aspects of studies in this field • demonstrates complex, deep understanding of the subject matter Effective and comprehensive: • evidence of thought and reflection • often relates material to other knowledge domains • includes critical appraisal, but may also summarize rather than evaluate some aspects of literature • review identifies and attempts to resolve theoretical puzzles • essential content within the domain is successfully integrated

Table 13.1 (continued)

Grade	Introduction/literature review

Credit good level of achievement 65–74%

The report:

- is complete, well structured and well presented
- is written in a clear style that communicates points effectively on first reading
- synthesizes and applies concepts appropriately to the problem
- includes coherent critical comments with justification based on evidence in all sections that reflect a sound understanding of key issues
- uses evidence/argument from the literature in the field in analysis

Review identifies and defines major issues:

- clear and strong arguments are developed within some major issues
- some tendency to summarize literature rather than develop an integrative and logical argument
- technical issues treated competently

Pass 50–64%

The report:

- addresses all four major themes in the analysis but does not integrate or relate key ideas and issues effectively
- is presented in an organized manner but may contain irregularities in style, expression that do not interfere with meaning
- provides critical comments with justification in some sections that reflect a basic understanding of key issues
- demonstrates that the literature in the field has been consulted

Review identifies some major issues:

- comments are essentially descriptive
- minimal critical analysis is attempted
- *or* analysis lacks depth
- *or* analysis is somewhat confused
- main focus is on concrete issues
- lack of integrating argument
- some technical expertise revealed
- may have non-major factual errors

Fail > 50%

The report:
- does not address the four major themes of the analysis
- evidence of plagiarism or academic dishonesty
- presented in a disorganized, incoherent manner
- contains no/little or inappropriate critical comments
- provides no/little justification for critical comments
- does not show any appreciation of the literature in the field

Accounting

'Accounting 1' is a one-semester core course in the first year of a three-year bachelor of business administration (BBA) degree programme offered by the Department of Accountancy of the Faculty of Business at the City University of Hong Kong. The number of students in each class is 200. The course was designed by Dr Olivia Leung of the Department of Accountancy.

Course aims

1 Provide students with technical knowledge in processing, preparing and reporting accounting information in accordance with GAAP (generally accepted accounting principles) for external users in a modern economy.
2 Provide students with general knowledge about internal control procedures and financial ratios.
3 Encourage students to be responsible and active learners.

Intended learning outcomes (ILOs)

On completion of this course, student will be able to:

ILO1 *Record* accounting transactions related to cash, receivables, inventories, fixed assets, payables, shareholders' equity, revenues, costs of merchandise sold and expenses

  Prepare financial statements (balance sheets, statements of shareholders' equity, statements of retained earnings, and income statements) for servicing and merchandising companies

ILO2 *Identify* and *explain* fundamental GAAP (generally accepted accounting principles)

  Select and *apply* the appropriate GAAP to support accounting treatments in preparing financial reports

ILO3 *Identify* internal control procedures over cash, receivables, inventories and fixed assets

  Calculate and *interpret* fundamental financial ratios based on information collected from balance sheets and income statements

ILO4 *Be a responsible learner*: *attend* classes and *submit* assignments on time and prepared, *be attentive* in classes; *follow* teaching schedule closely; be an active learner: *actively participate* in class activities; be *self-motivated*.

Teaching and learning activities (TLAs)

TLA1: Situation: Interactive lecture

Concepts and general knowledge of financial accounting are presented with PowerPoint slides:

- Personal digital assistant (PDA) questions and answers: students respond to questions in lectures using their PDAs and the lecturer provides feedbacks based on students' responses.
- Work-along exercise: students are given exercises and are encouraged to work along with the lecturer and their peers as the lecturer covers each topic. This exercise helps students follow the lecture closely and to visualize the applications of the concepts.
- Concept map: in the beginning or at the end of each lecture, the lecturer uses the concept maps to demonstrate links between various topics presented in the lecture.

Major focus: ILOs 1, 2 and 4; minor focus: ILO3.

TLA2: Situation: Tutorial
Technical procedures and practice questions are covered:

- Weekly tutorial assignments: assignments for each week are specifically assigned to give students opportunity to think through the concepts and to apply the concepts to various business transactions.
- Various in-class activities: students are given various activities such as work-along practice questions, group discussions, self-test multiple-choice questions, ideas sharing and presenting time etc.

Major focus: ILOs 1, 3 and 4; minor focus: ILO2.

TLA3: Situation: Outside classroom activities
Additional help is provided outside official class time:

- Tutor consultation: each tutor provides four consultation hours weekly to help his/her students with technical issues or issues with learning accounting in general.
- SI (Supplementary Instruction) scheme: performing second-year accounting major students are selected to be SI leaders. Each leader will head a group of FB2100 students and to meet with them weekly to provide additional help on self-learning skills in accounting.
- Helpdesk: extra help is provided to students who have difficulties when they are preparing for mid-term test and final examination. Designated helpers provide help to students throughout the week before mid-term test and final examination to answer students' technical questions.

Major focus: ILOs 3 and 4; minor focus: ILOs 1 and 2.

Assessment tasks (ATs)

AT1: Tutorial assignments and participation (15%)
Weekly tutorial assignments are given to students to assess students' understanding and knowledge on topics listed in the weekly teaching schedule.

Major focus: ILOs 1 and 4; minor focus: ILOs 2 and 3.

AT2: Group project (15%)

Students in tutorial classes are grouped into four groups (i.e. each group is made up of four to six students). Each group will be given a project on either internal control procedures or financial ratios. Groups are required to submit written reports.
Major focus: ILO3.

AT3: Mid-term test (30%)

The test is designed to assess students' technical knowledge in analysing business transactions, journalizing and preparing financial statements for external reporting.
Major focus: ILOs 1 and 2.

AT4: Final examination (40%)

The examination is designed to assess students' technical knowledge in analysing business transactions, applying accounting principles to support accounting treatments, journalizing preparing financial reports for external users.
Major focus: ILOs 1 and 2.

Grading criteria

Some examples of grading criteria are shown in Table 13.2.

Engineering

'Engineering principles and design' is a one-semester course in the first year of a three-year bachelor of manufacturing engineering programme in the Faculty of Science and Engineering at the City University of Hong Kong. Usual enrolments are 180 students. The course was designed by Dr Lawrence Li of City University Hong Kong, in consultation with Mark Endean, Open University, Milton Keynes, UK.

Course aims

Engineers plan, analyse, design and build anything that may move and sustain load – products range from toys to automobiles and aircraft. They employ an energy source and convert it into mechanical motions in machines such as robots or pumps. This is the second of two closely linked courses, 'Mechanics' and 'Engineering Principles and Design'. Both courses aim to lay down the foundations of mechanical engineering principles in such a way

Table 13.2 Examples of grading criteria of different assessment tasks in accounting

Group project (AT2)

ILO	Content	Excellent A+ A A−			Good B+ B B−			Adequate C+ C C−			Marginal D
ILO3	Each group is given a case on internal control procedures Each group is required to write a report to study the case and to analyse the business's control procedures	Able to precisely identify and explain both strong and weak existing internal control procedures; able to design internal control procedures specifically for the company			Able to identify and describe both strong and weak existing internal control procedures; able to suggest some commonly used internal control procedures			Able to identify and briefly describe strong and weak existing internal control procedures			Able to identify strong and weak existing internal control procedures

Mid-term (AT3) and final examination (AT4)

ILO	Excellent A+ A A−	Good B+ B B−	Adequate C+ C C−	Marginal D
ILO1	Able to journalize accounting transactions in all areas covered with appropriate account titles and amounts; able to project the impacts of the journal entries to financial statements	Able to journalize accounting transactions in most covered areas; able to project the impacts of some journal entries to financial statements	Able to journalize some accounting transactions; able to carry some journal entries to financial statements	Able to journalize some accounting transactions
	Able to prepare all financial reports for both servicing and merchandising companies in an accurate and appropriate manner and format in reflecting a true and fair view of the financial reports	Able to prepare all financial reports for either servicing or merchandising companies in an accurate manner in reflecting a true and fair view of the financial reports	Able to prepare most financial reports for either servicing or merchandising companies	Able to prepare some financial reports for either servicing or merchandising companies

ILO2	Able to identify and clearly explain GAAP in writing; able to demonstrate application skills by selecting the appropriate GAAP in supporting various accounting treatments	Able to identify and describe GAAP in writing; able to discriminate between different principles under GAAP	Able to recall and describe some principles under GAAP	Able to recall some principles under GAAP

that the students can identify the appropriate concepts required in given engineering problems and apply them to formulate the suitable engineering solutions.

Intended learning outcomes (ILOs)

On successful completion of this course, students should be able to:

ILO1 *Apply* the principles of mechanical kinetics to single degree of freedom vibration systems

ILO2 *Outline* the fundamental theory of friction and wear and its applications in engineering

ILO3 *Describe* the basic theories of fluid mechanics and heat transfer

ILO4 *Apply* the basic engineering mechanics principles to the design and implementation of a simple engineering system (such as a projectile machine) and the evaluation of its performance

ILO5 *Work* effectively as a *team* member in a small-scale engineering project

Teaching and learning activities (TLAs)

TLA1: Situation: Large class
This is a typical lecturing setting but efforts are made to insert short questions regarding the lesson so that students have opportunities to discuss with each other. From time to time students are asked to discuss among themselves for a couple of minutes regarding a topic that has just been taught. This is to give them some space to relax between topics and provide a review of the lesson so far.
  Major focus: ILOs 1 and 2; minor focus: ILO3.

TLA2: Situation: Small group
Students interact more closely with the teacher than is possible in the large class: much use is made of think-aloud modelling in mathematical problems.

Students likewise solve problems and receive diagnostic feedback. Both large and small class teaching variously address the first three ILOs. Small class – the format is flexible and the teaching context is problem solving. The students are first asked to work among themselves to see whether a solution can come up. If not, the teacher will join one group and solve the problem. After that, the students are encouraged to teach each other regarding the problem before the class proceed to the next question.

Major focus: ILOs 1 and 2; minor focus: ILO3.

TLA3: Situation: laboratory

The lab exercises are designed to supplement the taught materials such as friction, fluid mechanics and heat transfer.

Major focus: ILOs 1 and 3.

TLA4: Student-centred activity (SCA)

SCA is a project that utilizes the subject material of the courses 'Mechanics' and 'Engineering Principles and Design' to design a simple mechanism. The students are expected to work in teams to develop the schematic design, perform the kinematics/kinetic analysis, make an analysis of loading, investigate the behaviour of the components under elastic and dynamic loading and make appropriate design decisions. The students also investigate friction and lubrication aspects of the components and finalize their design.

Major focus: ILOs 4 and 5.

Assessment tasks/activities (ATs)

There are three major assessment situations: final examination, laboratory report and the SCA (project) according to the weighting in Table 13.3.

Examination and laboratory report are numerically marked and grades awarded accordingly.

The SCA (project) is graded using the following criteria.

Group assessment
a Prototype (30%) – the working machine built to given specifications will be assessed based on its design, effectiveness, reliability and workmanship.
b Software (30%) – a simple software programme will be written to determine the control parameter(s) for the machine to perform a given task (e.g. to propel the golf ball for a specified distance). The software can be implemented in any preferred computer languages or application software such as Excel.
c Report (40%) – the typed report shall include:

- sketches of different design and related comments
- calculations behind the final design

Table 13.3 Weighting of the three assessment tasks in engineering with respect to the ILOs

ATs	Examination	Laboratory report	SCA	Total (%)
ILO 1	20	5	—	25
ILO 2	10	—	—	10
ILO 3	10	5	—	15
ILO 4	—	—	45	45
ILO 5	—	—	5	5
Total (%)	40	10	50	100

- drawings with clear major dimensions
- calibration data and graphs
- reconciliation between theory and practice
- software algorithm, description and also listing if available
- anything that is useful to explain and promote the project work.

Peer-assessment

Assessment of others is an important skill for a professional engineer. Near the end of the project, each student will be asked to assess different members of the group objectively. This is used to differentiate the project contribution from each group member and their effectiveness as an engineering team player. The results are used to calculate the final project mark for each student.

Information Systems

'Management Information Systems I' is a one-semester core course in the first year of a three-year bachelor of business administration (BBA) degree programme offered by the Department of Information Systems of the Faculty of Business at the City University of Hong Kong. The number of students registered in the course in 2006–2007 academic year is 810, divided into smaller classes. The course was designed by Dr Ron Chi-Wai Kwok of the Department of Information Systems.

Course aims

1 Provide students with knowledge about the technological foundation of business information systems.
2 Equip students with the essential skills to work with common computer applications in today's business world.

3 Familiarize students with business information systems relevant to their professional career and applications in Hong Kong.

Intended learning outcomes (ILOs)

On completion of this course, student will be able to:

ILO1 *Describe* the basic concepts of information systems, their composition, configuration and architecture, including the internet and web-based technologies in particular

ILO2 *Explain* the social, economic, regulatory, political and mainly ethical aspects in the development, implementation and use of information systems in international business settings

ILO3 *Apply* the general knowledge and methodologies of information systems, including the use of hardware and software, to *devise* and *evaluate* effective solutions to international business problems, given the information needs

ILO4 *Design* and *develop* particular constructs and models to support various levels of international business activities using different tools such as Microsoft FrontPage, Microsoft Access and Microsoft Excel

ILO5 *Work* productively as part of a team and, in particular, *communicate* and *present* information effectively in written and electronic formats in a collaborative environment

Teaching and learning activities (TLAs)

TLA1: Situation: Interactive lecture

Concepts and general knowledge of information systems are explained:

- Personal digital assistant (PDA) questions and answers: students respond to questions in lectures using their PDAs and the lecturer provides feedbacks based on students' response.
- Gobbets: showing videos about business cases and scenarios using the e-Organization (e-Org) cases.
- Concept map: the lecturer uses concept maps to conceptualize presented materials.
- Role play: students act as IT technicians and assemble a computer system.
- PDA one-minute note: at the end of the lecture, the lecturer reminds students to use their PDAs to write down the main topic that they find most difficult to understand in the session or the major question that they want to raise. In the next lecture, the lecturer provides feedback based on students' concerns in their one-minute notes.

Major focus: ILOs 1 and 2; minor focus: ILO3.

TLA2: Situation: Computer lab tutorial

Technical aspects of information systems design and development are covered:

- Computer lab exercises: hands-on activities on Microsoft FrontPage, Excel and Access.
- Group project discussion: discussion on various aspects of the group project (setting up a web page and a database for an online store, using Excel for decision support).

   Major focus: ILO4; minor focus: ILOs 3 and 5.

TLA3: Situation: Outside classroom activities

Additional help provided outside official class time:

- e-token: a PDA system in which students earn e-tokens by completing some learning-oriented activities such as crossword puzzles that are downloadable to their PDAs. Students can complete the downloaded PDA exercises at any time and anywhere (e.g. in MTR or on a bus).
- Online helpdesk: an online system to provide extra help to students having difficulties with the course outside the classroom. During the assigned periods, students can raise their questions about mid-term test or final examination in the online system. The tutors will answer their questions within four hours during the office hour.

   Major focus: ILOs 1 and 3; minor focus: ILO2.

Assessment tasks (ATs)

AT1: Tutorial assignments and participation (10%)

Two assignments (3% each) are given to assess the student's competence level working with Microsoft FrontPage, Microsoft Access and Microsoft Excel.
   Major focus: ILO4, minor focus: ILOs 3 and 5.

AT2: Group projects (35%)

The project is divided into three phases; each is designed to assess the student's ability in constructing interactive web pages, working with databases and devising decision support models in a business setting.
   Major focus: ILOs 3 and 4; minor focus: ILO5.

AT3: Mid-term test (15%)

The test is designed to gauge the student's grasp of information systems concepts and knowledge, as well as the ability to apply them to solve business problems in various situations.
   Major focus: ILOs 1 and 3; minor focus: ILO2.

AT4: Final examination (40%)

The examination is designed to gauge the student's grasp of information systems concepts and knowledge, as well as the ability to apply them to solve business problems in various situations.

Major focus: ILOs 1 and 3; minor focus: ILO2.

Grading criteria

Some examples of grading criteria are shown in Table 13.4.

Table 13.4 Some examples of grading criteria for different assessment tasks in information systems

Group project phase 1 (AT2)

ILO	Content	Excellent A+ A A–	Good B+ B B–	Adequate C+ C C–	Marginal D
ILO3 **ILO4**	Overall design (sizing, grouping, alignment, colour, look and feel, etc.)	Designed in a professional way: fonts and graphics complement each other, text is in the appropriate size, making it easy to read, appropriate use of colour, easy navigation through the pages	The ability to design a professional webpage is demonstrated in most pages with a few exceptions	The quality in most pages are average (e.g. inappropriate font size/item grouping/font colour/background colour, etc.)	A merely acceptable design in general
ILO4	Creativity	Highly creative design: novel and original, clearly superior to templates or examples covered in class	Design with some creative idea, on top of templates or examples covered in class	Average design with few creative ideas	Little creativity shown
ILO4	Practicability	Extremely practical design: can be considered a usable	Quite a practical design: lacking a few minor	Average design, but not very practical since a few major	Only satisfies a small number of

product even commercially, since it satisfies all the functional requirements set out	components to be considered complete	components are not implemented	practical needs

Mid-term (AT3) and final examination (AT4)

ILO	Excellent A+ A A−	Good B+ B B−	Adequate C+ C C−	Marginal D
ILO1	Demonstrate sound knowledge of most materials covered, able to describe all concepts of information systems and to identify relationship between difference concepts	Able to describe various major concepts of information systems with thorough comprehension of each and able to discriminate between different concepts	Able to recall and describe some important concepts of information systems and able to show some linkages between different concepts	Able to recall major concepts of information systems with simple description, with ability to grasp linkages between a small number of concepts
ILO2	Able to explain impact of information systems from various perspectives and how this determines the use of information systems in international business settings based on sound knowledge	Able to explain information systems' impacts in the various aspects, with well-rounded knowledge in international business settings	Able to explain some of the information systems' impacts in some aspects, with some knowledge in international business settings	Able to explain a few important impacts of information systems, with knowledge limited in local business settings
ILO3	Able to make critical judgments by applying sound information systems knowledge, compare and discriminate between ideas and create unique solutions to business problems	Able to apply various components of information systems to solve open-ended as well as closed-ended business problems using skills and knowledge acquired	Able to apply some components of information systems to solve simple problems using skills and knowledge acquired	Able to apply some components of information systems to form partial solution to business problems using skills and knowledge acquired

Quality enhancement

To facilitate quality enhancement both for the course teachers/programme leader and also individual students, Dr Kwok makes use of the assessment grade results for transformative reflection.

Course-level achievement

Table 13.5 shows the integrated (averaged) grades of all students in a given course, with respect to different ATs and different ILOs. It also shows the overall grades of students in each AT and each ILO, as well as the final grade of students at the course level.

   Thus, students in the course are good at ILO4 and ILO5, but just okay in ILO1 and ILO2. Based on these results, the course leader may need to focus more on facilitating students achieving ILOs 1 and 2 in the next semester. The programme leader can think about the adjustment of the curriculum of the year 2 courses accordingly, in order to help students strengthen their ILOs 1 and 2. The year 2 course leaders can also have a better understanding of their incoming students and better prepare the courses on these issues.

Table 13.5 A quality-enhancement measure focusing on the mean results for a given course

The left-hand column lists the assessment tasks, the top row the ILOs. Cell entries are the mean grades obtained in the course

ATs	ILO1	ILO2	ILO3	ILO4	ILO5	Total
AT1				A–		**A–**
AT2				A–		**A–**
GP1			A	A	A–	**A–**
GP2			B+	A–	B+	**A–**
GP3			A–	A–	A–	**A–**
MTT	C+	C	B			**B–**
FEX	B–	B–	B			**B–**
PAT					A–	**A**
Total	**B–**	**B–**	**B+**	**A–**	**A–**	**B**

GP1 – group project 1
GP2 – group project 2
GP3 – group project 3
MTT – mid-term test
FEX – final examination
PAT – tutorial participation

Individual student achievement

Table 13.6 shows how the quality enhancement system works for an individual student's performance in the ATs and in each of the ILOs.

   This student is weak in ILO1 and ILO2, but strong in ILO4 and ILO5; weak in mid-term test and final examination, but good in group project. This provides feedback to the student about the sort of areas represented by ILOs 1 and 2 and would help his/her decision making in years 2 and 3 to choose courses that would reinforce their learning in these areas if appropriate.

Table 13.6 A quality-enhancement measure focusing on the results obtained by an individual student

The left-hand column lists the assessment tasks, the top row the ILOs. Cell entries are the grades obtained by an individual student in the course

ATs	*ILO1*	*ILO2*	*ILO3*	*ILO4*	*ILO5*	*Total*
AT1				A–		**A–**
AT2				B+		**B+**
GP1			A+	A+	B+	**A**
GP2			A–	A	B	**A–**
GP3			A	A–	A–	**A–**
MTT	C+	C–	C			**C**
FEX	C	C+	B			**C+**
PAT					A	**A**
Total	**C**	**C+**	**B**	**A–**	**A–**	**B**

Management sciences

'SOM1: Design of Service Delivery Systems' is a one-semester course in the second year of the Service Operations Management degree programme offered by the Department of Management Sciences of the Faculty of Business at the City University of Hong Kong. It is also offered as an elective or an out-of-discipline course to other students. The number of registered students in 2006/07 is 74. The course was designed by Ms Sandy Wong of the Department of Management Sciences.

Course aims

This course provides students with the knowledge of how to address the major issues involved in the design of the service package and the service

delivery system. The strategic role of the supporting service facility and the challenges of delivering exceptional service quality are emphasized in the context of service organizations.

Intended learning outcomes (ILOs)

On successful completion of this course, students should be able to:

ILO1 *Describe* the service concept and the nature of services
ILO2 *Discuss* the competitive service strategy and the role of information in services with examples
ILO3 *Critically discuss* the service delivery including the service process and service encounter
ILO4 *Identify* service quality problems and use the quality tools for *analysis* and *problem solving*
ILO5 *Recommend* the facility design features to *identify* bottleneck operation and *remove* the anxiety of disorientation
ILO6 *Evaluate* the service facility location to *minimize* total flow–distance of a service process layout and to *estimate* the expected revenues and market share

Teaching and learning activities (TLAs)

TLA1: Situation: Interactive lecture
- Lectures: concepts and general knowledge of service operations management are explained.
- PDA questions and answers: students respond to questions in lectures using their PDAs and the lecturer provides feedback based on students' response.
- Peer learning: students will be asked to work in a group of two or three to recap and answer questions of the major topics that they learned in the previous lecture. They are required to share and present their answers to the class.
- Videos: videos about business cases and scenarios are shown and followed with class discussion.
- PDA one-minute note: at the end of the lecture, the lecturer reminds students to use their PDAs to write down the main topic that they find most difficult to understand in the session or the major question that they want to raise. In the next lecture, the lecturer provides feedback based on students' concerns in their one-minute notes.
- Learning log: students have to respond to each of the ILOs addressed in each lecture. Responses and reflection can vary from how they learned

it, what activities reinforced the concepts learned, resources they used to learn the concept etc.

Major focus: ILOs 1, 2, 5 and 6; minor focus: ILOs 3 and 4.

TLA2: Situation: Tutorial

Students are required to team up with their classmates and participate in the following activities:

- Role play: students act as service providers and customers to simulate service encounters.
- Tutorial exercises and activities: students respond to and participate in in-class exercises and activities. They are required to apply real-life examples or their own service experiences to their learnt subjects.
- Group discussion and case study: discussion on various aspects of the assigned major issues or questions as well as the assigned case studies.

Major focus: ILOs 3 and 6; minor focus: ILOs 1, 2, 4 and 5.

TLA3: Situation: Outside classroom activities

Students are required to carry out some learning-oriented activities outside their classroom such as mystery shopping, walk-through audit, servicescape, process flow and layout improvement. Students present their findings and results of work to the class.

Major focus: ILOs 3, 4 and 5.

Assessment tasks/activities (ATs)

Group work (45% AT1, AT2, AT3)

The objective of group work is to equip students with the necessary knowledge, attitude and skills to become a deep learner by means of small group discussion and sharing. Students are required to form a group of 4–5 to work on the group course work, introduce themselves and exchange contact information; give a name to the group and appoint a group leader for coordination; let the teacher have the group name, student ID and names as well as the leader's contact number. Students are also asked to identify their learning expectations of the course.

AT1: Outside activities and presentation (15%)

Teams are asked to carry out some outside classroom activities to apply what they learned in lectures and to present the results of work during tutorial classes in week 9 and 10. Students may use other forms of presentation (e.g. role play, debate etc.). All team members have to show up but it's not necessary for all members to do the presentation.

Major focus: ILOs 3, 4 and 5.

AT2: Tutorial exercises and activities (20%)

Students can team up to a maximum of four to work on the assigned tutorial exercises and activities. Marks will be awarded to those students who demonstrate their familiarity with literature, their preparation and understanding of the topics and, more importantly, their contributions to the assigned activities.

Major focus: ILOs 1, 2, 3 and 5; minor focus: ILOs 4 and 6.

AT3: In-class participation and discussion (10%)

Students are required to critically discuss, share and present the assigned topics. Students can pair up or work individually to participate in the discussion topics and issues. They are expected to think and learn how to engage in an exchange of ideas to construct their understanding of knowledge and not just to memorize it. Students are expected to point out agreements or disagreements, to raise appropriate questions and to brainstorm solutions to problems. Extra marks are awarded to those who can draw relevant implications to apply their daily life examples of service experiences. PDAs are required for the Q&A session.

Major focus: ILOs 1, 3, 5 and 6; minor focus: ILOs 2 and 4.

Individual work (55% AT4, AT5, AT6)
AT4: Learning log (5%)

The purposes of the learning log are to develop students' awareness of all the ILOs and learning processes; to develop their ability to reflect on learning activities; and to encourage instructors to inform students of weekly learning outcomes. Learning logs are submitted via BlackBoard.

Major focus: all ILOs.

Self-reflection on outside activities (5%)

This is the individual work component of AT1. Each student is required to prepare and submit a one-page write-up to report their self-reflection on the assigned outside activities, focusing on (a) their reflection on the subjects/ topics they learned during the activities, (b) comments on their feelings about their learning experience and (c) give recommendations for further improvement.

Major focus: all ILOs.

AT5: Mid-term test (15%)

The mid-term test is scheduled during lecture session. It addresses only the first three ILOs for revision purpose and assesses the understanding of key concepts. The format is multiple-choice and/or closed-book short essays.

Major focus: ILOs 1 and 3; minor focus: ILO2.

AT6: Final exam (30%)

The final exam is a two-hour semi-closed-book in-class exam consisting of essay-type questions (both qualitative and quantitative). Students are allowed to bring in one A4-sized study aid prepared by themselves but no additional stickers or labels can be attached. Students are required to quote examples to support their arguments if appropriate.

Major focus: ILOs 5 and 6; minor focus:ILOs1 and 3.

Grading criteria

Some examples of grading criteria are shown in Table 13.7.

Table 13.7 Some examples of grading criteria for different assessment tasks in management sciences

AT2: Tutorial exercises and activities

Excellent A+ A A– 4.3 4.0 3.7	*Good* B+ B B– 3.3 3.0 2.7	*Adequate* C+ C C– 2.3 2.0 1.7	*Marginal D* 1.0	*Failure* 0.0
Clearly and correctly state most critical points and important contributions of the assigned exercises and activities Discuss issues critically Draw significant and relevant implications to Hong Kong service sector Good presentation skills Strong evidence of familiarity with literature	Clearly and correctly state some critical points and important contributions of the assigned exercises and activities Discuss issues critically Draw some relevant implications to Hong Kong service sector Good presentation skills	Clearly and correctly state some critical points and contributions of the assigned exercises and activities	State a few critical points and contributions of the assigned exercises and activities	Little or no evidence of contributions to the assigned exercises and activities

(continued)