introduction to
Assessment for Learning
Guide summary

What is assessment?

In its most general form, assessment can be described as the methods we use to collect and interpret data in order to make judgements about individual students, e.g. providing students with a mark/grade for a piece of coursework. Not all assessments lead to the generation of marks; some are designed purely to provide feedback to students, and these different types of assessment will be covered in a later section.

Why do we assess students?

Developing & designing assessments and marking & providing feedback for students are some of the most time consuming tasks we undertake. So why do we do it? There are a number of reasons, for example:

• To provide feedback, which supports & promotes learning;
• To motivate & enthuse students;
• To provide students with marks/grades & thereby to classify student achievements;
• To provide us with feedback;
• For quality assurance purposes.

For many students however, assessment may be seen purely as a means of ‘getting a mark’. Research has shown that assessment & feedback are some of the most powerful determinants of student learning behaviours (Hattie, 1987; Boud, 1988; Brown & Glasner 2003), so it comes as no surprise that assessment has been described as “the tail that wags the curriculum dog” (Hargreaves, 1989).
Valid & reliable assessment

Validity and reliability are both central to effective assessment, but what do these terms actually mean in practice? Put simply, **validity** deals with the issue of whether the assessment task does in fact assess what you intended; an assessment task is said to be valid if it actually measures what it is supposed to measure (i.e. performance of the specified learning outcomes). **Reliability** requires that assessments should be as accurate, repeatable & objective as possible and should clearly link with the learning outcomes of the module. Reliability is therefore concerned with the extent to which other assessors would independently arrive at the same conclusions.

There is however, a trade-off between validity and reliability of assessments. For example, an assessment task that is 100% reliable may not actually assess the skills/knowledge/learning that you had intended. Take for instance a multiple-choice test in which a student achieves a high grade simply by recalling knowledge; this assessment could provide 100% reliability in terms of its accuracy and repeatability. However, if the intention of this assessment was to examine more than a student’s ability to memorise & recall information, then this method of assessment would not be 100% valid. To deal with the ‘trade off’ between validity & reliability it can be useful to draw up a quick module ‘assessment map’ to show the relationship between individual assessments and module learning outcomes; this will be covered in a later section.
Formative & summative assessment

Modules provide opportunities for students to learn, develop & apply their knowledge and skills and as such, should ideally include elements of both ‘formative’ and ‘summative’ assessment.

- **Formative assessment** provides opportunities for students to learn and improve their knowledge & skills throughout the course of a module and is dependent upon ‘prompt’ feedback. Incorporating elements of formative assessment & feedback throughout a degree programme is important, especially in the first year when students are getting to grips with University standards & expectations. Case studies to follow illustrate how staff at Reading are using formative assessments to support learning.

- **Summative assessment** is associated with generating marks and effectively summarises ‘how much a student has learnt’; it is therefore usually incorporated towards or at the end of a module.

Examples of some of the more common summative assessments used at Reading:
- Research project
- Essay
- Literature review
- Laboratory reports
- Field diary
- Portfolio
- Problem sheets
- Poster presentation
- Oral presentation
- Oral examination (Viva)
- Multiple-choice question test
- End of module/year examination
Diversifying assessment in Mathematics at Reading

Staff in the Department of Mathematics wanted to diversify the types of assessment methods they were using in undergraduate modules and in particular they wanted to explore opportunities for formative assessment to promote learning. In 2002 they received a grant from the University Teaching & Learning Development Fund to develop & pilot new types of assessment methods. Following a review of assessment research, staff set about designing and embedding a variety of new formative assessments & independent learning activities across a range of modules, focussing mainly on the first year curriculum. This involved working with Part one students, who study four mathematics modules in their first year, and piloting new formative assessment methods within three of these modules. The potential impacts of changing the assessment methods were examined by comparing the Part one examination results of these students with those of the previous year's cohort, who had experienced fewer types of formative assessment in the same modules (noting that there was no significant difference in the entry 'A'-level scores between the two year groups). Student opinion of these new formative assessments was also collated through questionnaires.

New assessments for Part one students:

i) Formative, diagnostic assessment tests were designed and piloted by all of the students with test results made available to both the students & staff. This enabled ‘weaker’ students to be identified and directed towards appropriate support at an early stage in their degree programme (e.g. the drop-in maths ‘surgery’);

ii) Students were paired up and involved in formative peer-assessment of problem sheets in class using marking sheets developed by staff: the ‘Buddy system’;

iii) Interactive on-line learning support resources (supported by Blackboard) were developed to complement module teaching. These resources incorporated formative assessments, which were designed to provide immediate feedback to students;

iv) Blackboard-based questionnaires were used to collect student feedback on their preferred forms of assessment at the end of their first year.
Conclusions

i) Comparisons of the previous year’s cohort showed some “general improvement” in the examination results and the pass rate for all Part one modules;

ii) There was positive feedback from the Part one students who experienced the new range of formative assessments. Overall, they appreciated the increased diversity of assessment methods;

iii) Variety in assessment, including new opportunities for formative assessment & feedback (both within and outside class), did appear to be beneficial to learning;

iv) Using a mixture of both summative and formative assessment types is important to support the diversity of student learning needs.

Dr Paul Glaister, Department of Mathematics.

Using Blackboard quizzes in Geography as formative & summative assessments at Reading

In the case of the Year 2,10 credit module, ‘Geomorphological Hazards’, BlackBoard quizzes have been developed as part of the formal summative assessment and cover a number of topics, which directly reflect the content of lectures: Volcanic Hazards, Earthquake Hazards, Snow Avalanche Hazards, Permafrost Engineering Hazards and Impact of Space Objects. The students (70–80 in number) are informed about the quizzes in the introductory lecture and are told that there will be a number of them relating directly to a lecture topic; the actual number of quizzes is, however, not specified. They are also told that the quizzes will be mounted on BlackBoard only after the lecture to which they relate has been given. At the start of each teaching session an announcement is made if a quiz has been mounted onto the module’s BlackBoard course. The students have until the end of term to complete the quizzes; they are permitted to have only one attempt at each (unless there is a network problem which interrupts the session, in which case the individual quiz is reset by the lecturer).

The quizzes were developed as part of this module’s assessment for several reasons:
• To encourage lecture attendance;
• To encourage wider reading (compared with other coursework);
• To facilitate the learning of basic facts (science & case studies);
• To promote flexible learning – quizzes can be accessed at any time by the students;
• To promote greater use of BlackBoard.

In Year 3, BlackBoard quizzes have been designed as formative assessments to provide students with an indication of how much they know and/or understand about various topics. Their use is optional, but evidence suggests that more than half the students attempt them. Two quizzes have been created, one for the module ‘Glacial Geomorphology’ and one for ‘Periglacial Geomorphology’. The students (20-30 in number) have access to the quizzes throughout the term and can have any number of attempts at each. The quizzes have been developed in this way to:

• Promote wider reading;
• Allow students to test their knowledge/understanding as the module progresses;
• Support flexible learning – quizzes are accessible to students at any time throughout the module;
• Promote greater use of the VLE.

The creation, marking and maintenance of the quizzes in BlackBoard has been very straightforward and the use of the ‘Pool Manager’ and ‘Assessment Manager’ mean that once created, questions can rapidly be compiled into a quiz. Depending upon the types of questions used, quizzes can require almost no marking and a spreadsheet with results can be downloaded automatically by staff. Whilst it is possible to dictate or control the exact circumstances under which the quiz is taken, this would rather miss the point of exercise since it would involve one timetabled session with all the students in a PC lab, one per machine, and only having the quizzes available for this specific period. Therefore if BlackBoard quizzes are to be used in non-time-tabled fashion, it is important to understand how students are likely to view and deal with them. Ultimately this means that the quizzes can only be safely used as part of a wider portfolio of assessed work.

Dr Steve Gurney, Department of Geography.
Mapping assessment tasks: assessing for learning

Assessment is an integral component of a module and should clearly link with the learning outcomes of that module. To help ensure this actually happens in practice it can be useful to ‘map’ a module’s learning outcomes with each of the proposed assessment tasks. Doing this can help to identify the following:

i) Are there clear links between the module’s assessable learning outcomes and the assessment tasks, i.e. are the assessments valid & reliable?

ii) Is there an appropriate balance of formative and summative assessment, i.e. are there opportunities for students to learn, develop & improve their skills as the module develops?

ii) Is the amount (and timing) of assessments appropriate for the module, e.g. in terms of the module level (Part) and number of credits;

iv) Is the diversity of assessment methods suitable, i.e. do the assessments support relevant skills development and do they provide equal learning opportunities for all students?

An assessment map is a useful method for reviewing assessments. Best of all it can be constructed within a few minutes using pen & paper!
Example of an assessment map for a Part two, ten-credit module with five assessable learning outcomes:

<table>
<thead>
<tr>
<th>Assessment Tasks</th>
<th>Learning Outcome 1</th>
<th>Learning Outcome 2</th>
<th>Learning Outcome 3</th>
<th>Learning Outcome 4</th>
<th>Learning Outcome 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essay plan (F)</td>
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<td>✓</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Essay (S)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>Research report (S)</td>
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</tr>
<tr>
<td>Online multiple choice quiz (F)</td>
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<td></td>
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<tr>
<td>Annotated bibliography (F)</td>
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<td>✓</td>
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</tr>
</tbody>
</table>

F: Formative assessment; S: Summative assessment

At a glance, this map shows that learning outcome 4 is not matched with any of the existing assessment tasks; this would need to be addressed if this learning outcome is to remain an assessable component of the module. Also, note that all of the assessment tasks are some form of written assignment. This might be entirely appropriate for the module; alternatively, this may provide an opportunity to expand the diversity of assessment methods whilst still providing clear links to the module’s learning outcomes. A module map can also help to ensure that all students are provided with the same learning opportunities, i.e. to ensure that assessments conform to the Special Educational Needs and Disability Act (2001), ‘SENDA’; see the University guides ‘What is SENDA?’ and the ‘Teaching Guide to SENDA?’ for more information.
There are a number of resources that support more in-depth investigation of module (and/or programme) assessments. One such resource is the ‘Assessment Audit Tool’, which has been developed by Professor Ian Hughes at the University of Leeds.

http://www.bioscience.heacademy.ac.uk/resources/Audit.htm

This tool poses a series of questions based on eight assessment-related topics:

1. Are the assessment methods appropriate to the learning objectives?
2. The assessment methods used – are they known to provide a secure assessment appropriate to the teaching style?
3. Are there published marking criteria and grade descriptors available to the student?
4. How is the pass mark decided? Do you make use of peer-assessment?
5. Is assessment timely and progressive throughout the course?
6. Is feedback provided?
7. Are resit/second chance arrangements known to students?
8. What are the students’ views on the quality and usefulness of the assessment?

By thinking about your own modules you’re invited to score your responses to these questions on a scale of 0–4 where you:

“Score 0 if the audit point has not been seriously considered at all. Score 1–4 if the audit point has been considered but reflection indicates that it is poorly (1), partially (2), adequately (3) or optimally (4) satisfied. Make a subjective judgement and score accordingly. Think about it from the student’s point of view as well as that of the course team.”
You are then asked to analyse your scoring and to consider:

• “Are there potential quick wins? There may be something that you or your colleagues could do very easily that would not cost a lot in terms of resources or time.”

• “Are there changes that require longer term planning? Does the change require agreement of others/resource allocation/time to implement?”

Professor Hughes states, “The purpose of this audit is developmental, not simply to come up with an overall score for the course. It is designed to help teachers consider the content and design of a course with respect to the issue of assessment and to see where they could improve the course to better address this issue” (Hughes, 2005).
Top tips: assessing for learning

There are a number of ways in which we can design and use assessments to effectively support student learning, including:

• Communicating the purpose of assessments to students and showing how they link to the module’s learning outcomes. Many staff share the assessment criteria with students to show them why & how they will be assessed;
• Providing constructive & timely feedback to students*;
• Designing assessments that support skills development*;
• Making use of technology to support assessment & feedback provision**;
• Setting an appropriate volume of assessment, taking into consideration the module’s level and its credit weighting;
• Using assessment methods that are demonstrably valid & reliable, and which conform to SENDA legislation (see ‘Teaching Guide to SENDA’).

notes
*Designing & diversifying assessments and providing effective feedback to students will be covered in future guides in the ‘Assessment for Learning’ series.
**Computer-aided assessment & feedback will be covered in a future guide in the ‘Learning Technology’ series.

quote
“If you want to change student learning then change the methods of assessment” (Brown et al., 1997).
Support available at the University of Reading

Information and advice about assessment can be obtained from the following sources at Reading:

**The Centre for the Development of Teaching & Learning (CDoTL)** can provide guidance in the design, development and evaluation of assessment methods, including computer-aided assessment. For example, CDoTL can provide:

- Staff workshops on both general and specific assessment & feedback issues (in association with the Centre for Staff Training & Development, CSTD);
- One-to-one support in the design, development & evaluation of assessment methods;
- Advice on diversifying assessment methods;
- Examples of assessment criteria for different types of assessment (from Reading and other Higher Education Institutions);
- Expertise and advice in setting up computer-aided assessments.

Contact the Centre via email cdotl@reading.ac.uk or via our website www.rdg.ac.uk/cdotl

**The Centre for Staff Training & Development (CSTD),** provides training on both assessment and student feedback provision. To find out more about the range of assessment workshops available to staff, contact the Centre by email cstd@reading.ac.uk or via the web www.rdg.ac.uk/cstd
The Disability office can provide advice on teaching in relation to the Special Educational Needs and Disability Act 2001 (SENDA). There are currently two University guides to support teaching staff in the context of the SENDA: ‘What is SENDA?’ and the ‘Teaching Guide to SENDA’. For further information contact the Disability Office: disability@reading.ac.uk or www.rdg.ac.uk/SpecialNeeds/
Resources

• University Guide to Policy and Procedures for Teaching & Learning [http://www.rdg.ac.uk/Handbooks/Teaching_and_Learning/]
• Examinations Office [http://www.rdg.ac.uk/Exams/]
• University of Reading Report on Assessment by Dr Anne Crook [http://www.rdg.ac.uk/cdotl/publications/docs/SDTLreport2004jan.pdf]
• Assessment Series Guides by the LTSN Generic Centre (now incorporated into the Higher Education Academy, HEA); CSTD has copies.
• University of Leeds (HEA Centre for Bioscience) Assessment Audit Tool [http://www.bio.ltsn.ac.uk/resources/Audit.htm]

References

References cited within this guide: