DEVELOPING A METHODOLOGY FOR ONLINE FEEDBACK AND ASSESSMENT

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Abstract

It is widely accepted that when seeking to implement CAA we should not begin with the technology but with the pedagogy. If CAA is to be used appropriately it must be regarded as a range of assessment strategies, including objective tests, formative self-assessment and so on. This paper describes an action research project to develop a methodology for the implementation of online feedback and assessment. The methodology incorporates pedagogic, operational and strategic issues and is emerging as part of the continued development of CAA at Sheffield Hallam University.

Introduction

This paper outlines a methodology for online feedback and assessment. The methodology is being developed by staff at Sheffield Hallam University as part of an ongoing action research project. The methodology seeks to document the processes academics work through when considering the use of online feedback and assessment in their teaching.

The methodology presented here is in the initial stages of development. We expect the methodology to mature and change as the debate about the role of online feedback and assessment continues at the University. The main driver for the development of this methodology is to provide a vehicle for such debate and discussion about the role of online feedback and assessment in modern university teaching and learning.

The methodology documents an evolving conceptual model for the design of online feedback and assessment activities. We choose consciously not to be overly prescriptive about how the methodology is used. It could be used as a step by step guide or as an overarching frame of practice in the fashion of Checkland and Scholes' Mode 2 soft systems methodology (1990, p230).

Research Approach

The research approach includes literature reviews, evaluation of best practice and benchmarking, methodology development workshops, and evaluation of the methodology via case studies.

Initial Literature Review

The Quality Assurance Standards (QAA, 2000) provide an interesting starting point for our examination of feedback and assessment. We have made a conscious effort to embed our CAA research in the established body of thinking about feedback and assessment.

In line with many writers in the field of assessment, the QAA distinguish three types of assessment:

- Diagnostic assessment – provides an indicator of a learner's aptitude and preparedness for a programme of study and identifies possible learning problems;
- Formative assessment – designed to provide learners with feedback on progress and informs development but does not contribute to the overall assessment;
- Summative assessment – provides a measure of achievement or failure made in respect of a learner's performance in relation to the intended learning outcomes of the programme of study.

The most common distinction in the literature is that made between formative assessment and summative assessment, nonetheless, many assessment activities that learners undertake are both formative and summative: for example, a student may undertake a piece of work and receive extensive feedback from the tutor to guide him or her in their future learning (i.e. formative assessment) but for the same piece of work the student might also be given a grade or a mark that contributes to the overall mark for the unit (i.e. summative assessment). Brown, Bull and Pendlebury (1997, p12) argue that the combining formative and summative assessment in this way may adversely affect the quality of the feedback that learner's receive. The multiple objectives of the assessment may prevent the giving of useful feedback. It may also make it harder for students to focus on the developmental aspects of the feedback if they are sidetracked by personal feelings concerning the mark they have achieved. Indeed, Biggs (1999, p43) argues that for formative assessment, students must feel free to reveal their ignorance and their errors in their thinking, and if the results are to be used for grading, they will be highly motivated to conceal possible weaknesses. He argues that formative assessment, as a vital function of teaching, should always be present, but the results should not be 'counted' unless the student agrees. The dilemma for tutors then is concerned with student enthusiasm and motivation to take part in formative assessment activities.

Fallows and Ahmet (1999, p4) identify the following principles of inspiration that can perhaps be used to enthuse and motivate learners to engage in online feedback activities:

- clear communication of learning objectives and desired outcomes;
- active learning tasks;

- use of positive feedback;
- appropriately focused examples;
- targeted assessment procedures.

If not least on the basis of anecdotal evidence, there seems to be a growing feeling that students are strategic in the work that they undertake and that many students choose (or perhaps are compelled by external pressures such as the need to undertake paid work) to focus upon assessed work only. This is usually regarded as a 'negative trend', but Biggs has argued that it is a trend that can be harnessed to positive effect. Biggs described the trend as *backwash* but argues that if students learn only what they think they will be tested on, this will result in inappropriate surface learning only in a poorly aligned system, where the test does not reflect the objectives. He argues that learning for the test is only bad learning, if the test is bad. The basic principle of good assessment then is to ensure that the assessment is aligned to the curriculum. To the teacher, assessment is at the end of the teaching-learning sequence of events, but to the student it is at the beginning. If the curriculum is reflected in the assessment, the teaching activities of the teacher and the learning activities of the learner are both directed towards the same goal. We can deduce from this that online feedback activities need to be transparently designed to contribute to successful performance in summative assessment.

The QAA code of practice recommends that institutions consider a number of aspects of feedback on assessed work that may be useful to us here:

- the timeliness of feedback
- specifying the nature and extent of feedback that students can expect in relation to particular types and units of assessment and whether this is to be accompanied by the return of assessed work
- the effective use of comments on returned work including relating feedback to assessment criteria in order to help students identify areas for improvement as well as commending them for evident achievement
- the role of oral feedback, either on a group or individual basis as a means of supplementing written feedback
- when feedback may not be appropriate

In addition to the role of feedback in the learning process (Kolb, 1984), assessment must be transparently fair. The QAA state that 'the principles, procedures and processes of all assessment should be explicit, valid and reliable' and this is clearly something that should apply to computer assisted feedback and assessment, and perhaps deserves even more attention in such a rapidly evolving field.

QAA suggest that institutions should consider:

- how to make information and guidance on assessment clear accurate and consistent and accessible to all staff, students, placement or practice assessors or external examiners
- the range and types of assessments used and how these measure appropriately the achievement by students of those skills, areas of knowledge and attributes

identified as intended learning outcomes for the module or programme, and allow strengths and weaknesses of the students to be demonstrated
- how to ensure that assessment is operated fairly within the programmes and that the principles for assessment are applied consistently across the institution
- how the reliability of assessment is demonstrated: eg use of marking schemes
- robustness of arrangements to monitor, evaluate and demonstrate the fairness of assessments

The QAA code of practice for students with disabilities has implications for the implementation of Computer Aided Assessment. It states that "the delivery of programmes should take into account the needs of disabled people or, where appropriate, be adapted to accommodate their individual requirements".

QAA go on to recommend:

"Institutions should consider making arrangements which ensure that all academic and technical staff:

- plan and employ teaching and learning strategies which make the delivery of the programme as inclusive as is reasonably possible;
- know and understand the learning implications of any disabilities of the students whom they teach and are responsive to student feedback.

Institutions should consider implementing IT and computer arrangements which maximise disabled students' access to learning include:

- ensuring that any courseware and electronic learning materials are fully accessible to disabled students using, if necessary, alternative hardware or software."

Technology has the power to make learning and teaching more accessible to disabled students or those with learning difficulties, for example virtual field trips allow students with mobility problems to engage with that experience. However if accessibility is not considered in either the design or implementation stage a whole section of the student population can be barred from taking a full and active part in learning, teaching as assessment.

Brown, Bull and Pendlebury (1997, p8-9) distinguish between ‘Developmental assessment’ (concerned with improving student learning) and ‘Judgemental assessment’ (concerned with licences and progression).

All assessment, whether formative or summative, or developmental or judgemental, is concerned with taking a sample of what students can do in order to make inferences and estimate the worth of their actions. There are, however, within this two potential weaknesses:

- the sample may not be representative of students’ capabilities
- assessment may not match the learning objectives of the course

It probably makes sense at this point to revisit the purposes of assessment. Why do we assess students? Brown, Bull and Pendlebury (1997, p10) identify a comprehensive list of reasons. They include reasons focused on the student learning process, the evaluation of learning and awarding of qualifications and feedback to tutors and the university about the quality of the learning process:

- To provide feedback to students to improve their learning
- To motivate students
- To diagnose a student's strengths and weaknesses
- To help students to develop their skills of self-assessment to provide a profile of what a student has learnt.

as well as those pertinent to the institution and the wider world:

- To pass or fail a student
- To licence to proceed or practice
- To select for future courses
- To licence to practice
- To select for future employment

and those associated with the teaching process

- To provide feedback to lecturers
- To improve teaching
- To evaluate a course's strengths and weaknesses
- To make the course appeal 'respectable' and creditworthy to other institutions and employers

One of the greatest challenges for tutors is ensuring that assessment does assess the intended learning outcomes. Biggs (1999, p142) proposes 'constructive alignment' of objectives, teaching context and assessment tasks in order to organise the teaching and learning context so that all students are more likely to use the higher order learning processes which 'academic' students use spontaneously. This, Biggs argues can only be achieved when all the components of a unit are aligned. So, the *objectives* express the kinds of understanding that tutors want from students; the *teaching* context encourages students to undertake learning activities likely to achieve those understandings and finally the *assessment* tasks tell students what activities are required of them and teachers how well those objectives have been met. There are, of course, other pedagogic taxonomies and schemas that can be used and the methodology has been developed in such as a way that the tutor is able to introduce the system with which he or she is most familiar or happy.

Many of the principles outlined above are echoed by the American Associate of Higher Education's definition of good practice (Chickering and Ehrmann, 2001):

1. Good practice encourages contacts between students and faculty
2. Good practice develops reciprocity and cooperation among students

3. Good practice uses active learning techniques
4. Good practice gives prompt feedback
5. Good practice emphasizes time on task
6. Good practice communicates high expectations
7. Good practice respects diverse talents and ways of learning

How can we design learning experiences that incorporate online feedback and assessment? How can we do this in the context of the established thinking about the role of feedback and assessment in learning and teaching? The methodology presented in this paper is hopefully a starting point.

A Methodology for Online Feedback and Assessment

A methodology for online feedback and assessment is presented in this paper. The methodology is designed to be used by module teams to explore opportunities for online feedback and assessment. The methodology has been informed by the initial literature review, and by critical consideration and evaluation by practising academics at the university.

The methodology (figure 1) is made up of three stages:

- planning and design
- development
- performance and evaluation

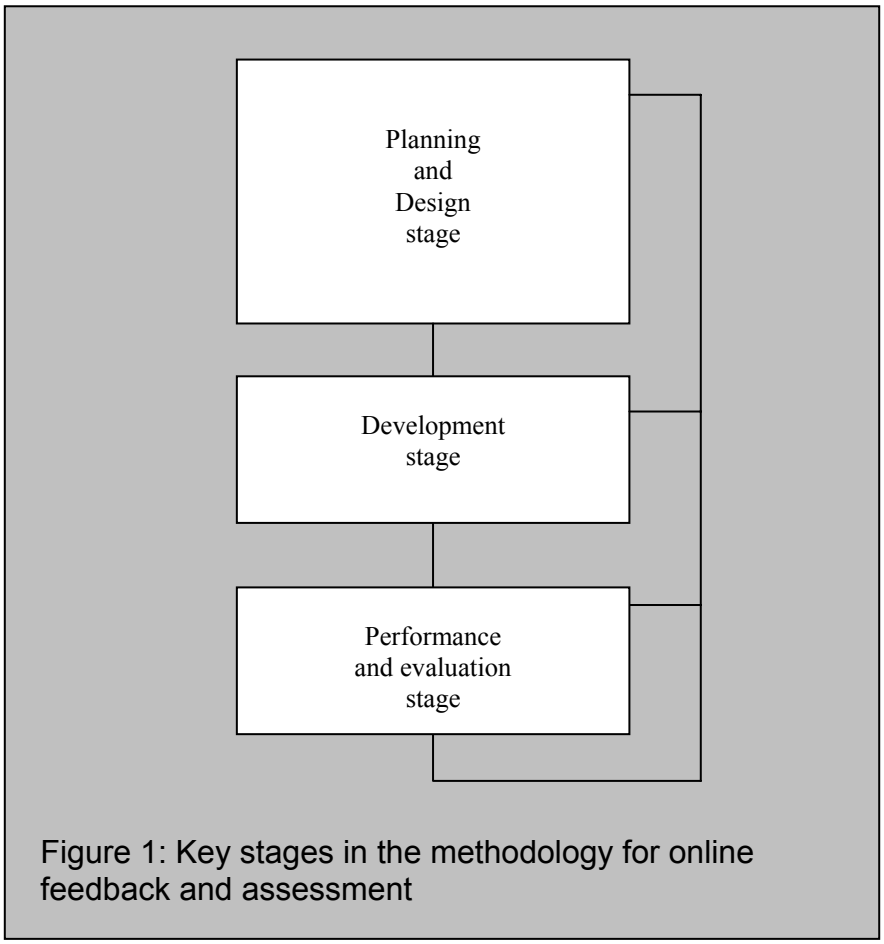


Figure 1: Key stages in the methodology for online feedback and assessment

The planning and design stage

The planning and design stage is concerned primarily with pedagogic considerations. Taking into account the context of the unit/module, appropriate feedback activities and opportunities are designed for learners. The feedback activities are compiled into a feedback plan for the unit/module that specifically tries to satisfy the stated learning outcomes.

The development stage

The development stage is concerned with the creation of resources to support the student experience and with the creation of online feedback and assessment environments.

The performance and evaluation stage

The performance and evaluation stage is concerned with piloting, performing and improving the online feedback and assessment activities in an environment where contingency plans are in place to protect the student experience.

A Detailed View of the Methodology

1. The planning and design stage

The planning and design stage comprises three main elements:

- considerations
- feedback activities
- feedback plan

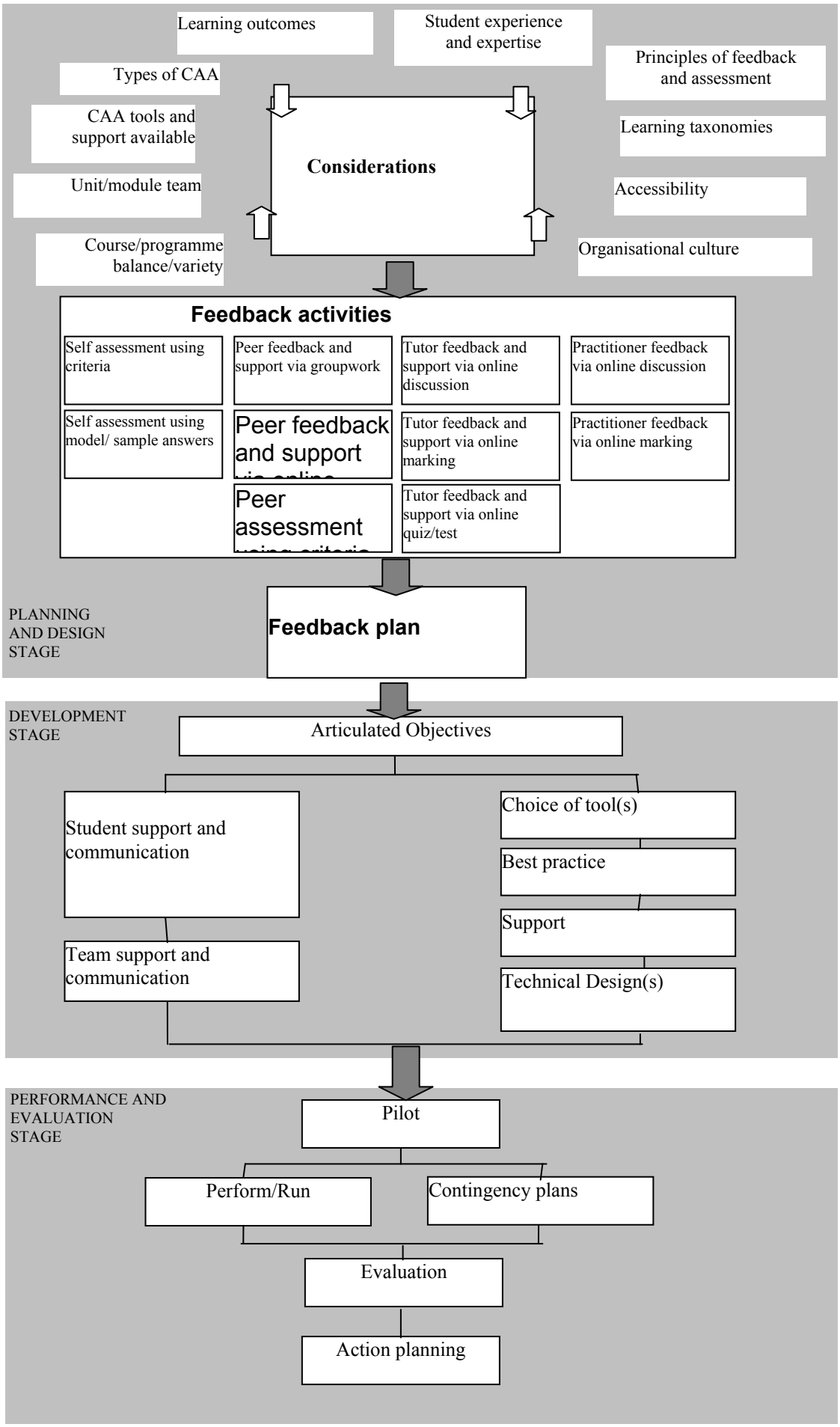
1.1 Considerations

The considerations stage gathers together some of the issues affecting the use of online feedback and assessment. This stage allows us to reflect upon the assumptions, constraints and opportunities that influence the use of online feedback and assessment in learning. Ten issues have been identified for consideration and they are listed below.

1.1.1 Learning outcomes: What are the expected outcomes of the learning experience? Are the learning outcomes defined by the institution? Does the tutor determine the learning outcomes? Are learners able to specify, modify or negotiate personal learning outcomes?

1.1.2 Experience and expertise of the students: An understanding of the level and range of prior experience and expertise that students bring to a module of study. A recognition of the diversity of prior experiences of teaching and learning (Prosser & Trigwell, 1999, p20)

1.1.3 Principles of feedback and assessment: Considerations from the literature review about types of feedback and assessment, timing of feedback and assessment, amount of feedback and assessment. External pressures such as changing QAA requirements and guidelines.


Learning outcomes
Student experience and expertise
Principles of feedback and assessment
Types of CAA
CAA tools and support available
Learning taxonomies
Considerations
Unit/module team
Accessibility
Course/programme balance/variety
Organisational culture
Feedback activities
Self assessment using criteria
Peer feedback and support via groupwork
Tutor feedback and support via online discussion
Practitioner feedback via online discussion
Self assessment using model/ sample answers
Peer feedback and support
Tutor feedback and support via online marking
Practitioner feedback via online marking
Peer assessment
Tutor feedback and support via online quiz/test
PLANNING AND DESIGN STAGE
Feedback plan
DEVELOPMENT STAGE
Articulated Objectives
Student support and communication
Choice of tool(s)
Best practice
Support
Team support and communication
Technical Design(s)
PERFORMANCE AND EVALUATION STAGE
Pilot
Perform/Run
Contingency plans
Evaluation
Action planning

1.1.4 Learning taxonomies: The conceptual models of learning that we use to formulate and plan the learning experience, for example, Bloom's cognitive taxonomy (1956) and Biggs and Collis' SOLO taxonomy (1982). Diversity of learning styles and the implications for online learning, feedback and assessment. (Pask and Scott, 1973)

1.1.5 Accessibility: consideration of accessibility and equal opportunities issues (including: prior knowledge for students of online feedback and assessment activities, treatment of everyone as individuals, alternative feedback and assessment activities if required, screen accessibility, access to PCs etc).

1.1.6 Organisational culture: This involves an understanding of the organisational culture in which we find ourselves. Evaluating the organisational culture helps answer some of the feasibility questions:

- what is possible in this organisation?
- what would be acceptable in this organisation?

1.1.7 Types of CAA: An appreciation of the different types of computer assisted assessment helps create an understanding of what is possible from a theoretical point of view. Some of the more commonly available forms of CAA include: online surveys, online quizzes and tests, online submission of assignments, discussion forums, and group areas. In addition, Ryan et al (2000, p129) outline the following computer supported assessment styles: short answer and essay type questions, marking assistants, general feedback via bulletin boards, web page submissions (media types e.g. 3D models, photographs and interactive features), automated marking of essays, short answers, and computer programs, and objective tests.

1.1.8 CAA tools and support available: Which CAA tools are available in this organisation? What level of support and staff development is available?

1.1.9 Course/programme balance and variety: A student-focused review that considers the range of modules that a student is studying and tries to ensure balance and variety in terms of feedback and assessment activities.

1.1.10 Team: The module team's culture and enthusiasm for online feedback and assessment.

The exploration of the above issues make take a variety of forms. It is likely that different individuals and different module teams will conduct the process in different ways. Some may choose to use group brainstorming and discussion techniques, some may prefer to use Checkland's rich picture approach (1981), others will have their own favourite approaches to creative problem solving. Ryan et al (2000, p43) propose a framework for course design that may be enlightening at this stage of the methodology. The framework includes four of our major components: desired learning outcomes; specification of course content; specification of tutorial strategies; assessment strategy to be used –these four components are closely interrelated ' a major aim of course design is to ensure their interrelations are meaningful in justifiable ways'.

1.2 Feedback activities

The analysis of the issues in the 'considerations stage' above is then developed into a online feedback and assessment design through the identification of feedback activities and the development of a feedback plan. This section looks at some of the options available to designers of online feedback activities.

As we have seen in the literature review, feedback activities can be designed into the student learning experience to:

- pace learning
- motivate learning
- develop learning
- practice for assignments

Online feedback activities can take many different forms and may include:

self assessment
    self assessment using criteria
    self assessment using model/sample answers
peer feedback and support
    peer feedback and support via groupwork
    peer feedback and support via online discussion
    peer assessment using criteria
tutor feedback and support
    tutor feedback via online discussion
    tutor feedback via online marking
    tutor feedback via online quiz/test
    tutor feedback to class after online survey
Practitioner feedback
    practitioner feedback and support via online discussion
    practitioner feedback via online marking

1.3 The Feedback Plan

This section is concerned with the development of a feedback plan for the module of study. The feedback plan collects together the feedback activities selected above and explores the relationships between them. The feedback plan considers the contributions of the feedback activities to the student learning experience. Sally Brown's 'fit-for-purpose' agenda (Brown and Glasner,1999, p6) is useful in this context and may be interpreted to evaluate the contribution and objectives of each feedback activity:

- who is best placed to provide the feedback?
- why are we giving feedback?
- when should we perform the feedback activity?
- how are we conducting the feedback activity?

- what are we assessing?

The feedback plan could be summarised in a chart that plots feedback against time (figure 3).

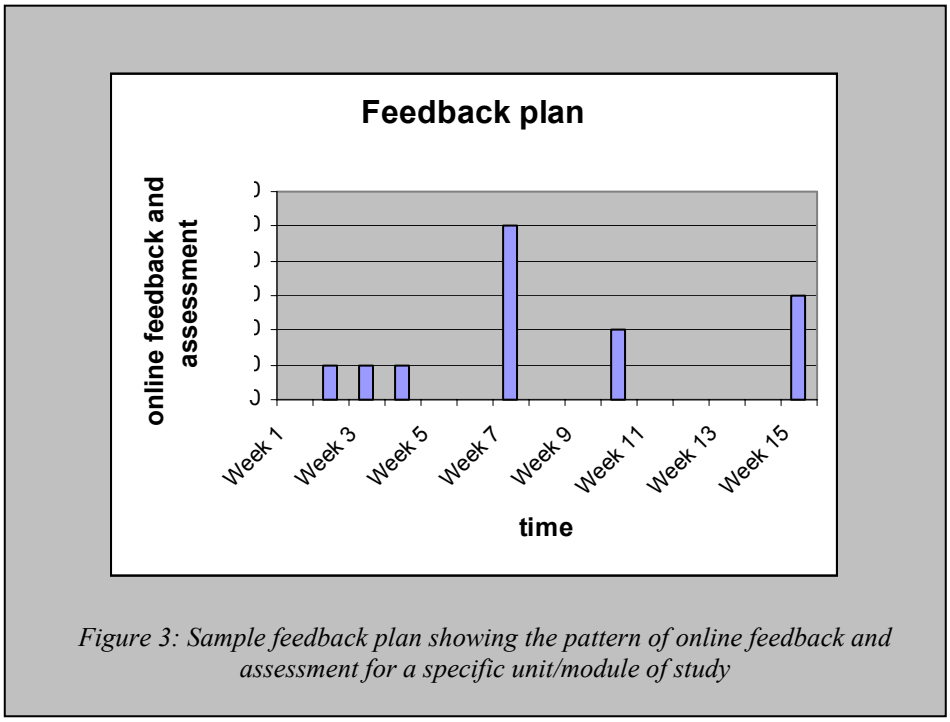


Figure 3: Sample feedback plan showing the pattern of online feedback and assessment for a specific unit/module of study

2. Development Stage

The development stage is concerned with the creation of resources to support the student experience and with the creation of online feedback and assessment environments. The development stage considers each feedback activity separately.

2.1. Articulation of objectives: The objectives of each online feedback activity form the starting point of the development stage.

2.2.1 Student support and communication: Core to the development stage is the development of student information about the context, value, and objectives of the online feedback/assessment activity. Holland and Arrowsmith (2000) have developed excellent student guides for online learning that should inform the development of student guides for online feedback and assessment activity. Prosser and Trigwell (1999, p169) agree that 'one of the key issues in the use of information technology is the way students perceive the role of information technology in learning and teaching. Their perceptions of learning and teaching situations

incorporating the use of such technologies are not given the attention that is necessary for good practice and that they deserve'.

Most importantly, communicating the aims and objectives of the assessment activity to the students so they understand its purpose and can negotiate any requirements needed such as extra time allowance. Be prepared to provide an alternative to CAA if not appropriate for the individual needs of the specific user.

2.2.2 Team support and communication: If large teaching teams are involved, it is also worth thinking about preparing and briefing the course tutors, administrative staff, and information advisors.

2.3.1 Choice of tool(s): A number of online feedback and assessment tools may be available to the module team. There may be choices relating the different conferencing or online discussion environments. There may be choices relating to different online questioning packages.

In many ways accessibility is a design issue, it is therefore something to consider in relation to determining choice of tools. For example choosing a CAA tool that is flexible (where font or background colours can be changed by the user), or the one most compatible with disability software, (e.g. software like Supernova that greatly magnifies text, screen readers for blind users etc.). Guidance about online accessibility issues is provided by DISinHE (2001)

2.3.2 Best practice: Module teams will typically wish to refer to best practice and guidelines in the area of online feedback and assessment. For example, there are guidelines on the production of multiple choice questions (Pritichett, 1999, p30; University of Cape Town, 2001).

2.3.3 Support: Negotiating and managing training and/or support for technical issues, pedagogic issues, accessibility issues, information resource issues and administrative issues.

Knowing what institutional support exists for disabled students and how it can support you as tutor. For example clarity of wording for questions is very important for dyslexic students as well as blind students who use a screen reader, can you receive advice on writing 'accessible' questions from a department within your institution? Are there technical staff that have accessibility included in their remit, are they able to help you choose the most appropriate CAA tool or help you adapt the one you are using?

2.3.4 Technical design(s): Working towards your articulated objectives within the constraints of the technology and current skill levels. A communication challenge that inevitably leads to compromise. Power, control, and responsibility all play key roles in this process. The product of this process is a working technical implementation of an online feedback/assessment activity.

The Performance and evaluation stage

The performance and evaluation stage is concerned with piloting, performing and improving the online feedback and assessment activities.

3.1 Pilot: Piloting will highlight problems with the design and implementation of the online feedback activity so that they can be addressed.

3.2.1 Performance/Run: The performance of the feedback activity. The management and guidance of the student experience, the coordination of the module team.

3.2.2 Contingency plans: Pre-defined contingency plans to include eventualities including: students not doing as you expected, systems not doing what you expected, tutors/module team not doing what you expected. Issues to consider include: agreed procedures to follow if things do not go to plan, development of university regulations to protect the student.

3.4 Evaluation: The online feedback and assessment experiences should be evaluated by:

- students, including the variation in their experiences and perceptions (Prosser & Trigwell, 1999, p160)
- academic: module team, peers, external examiners
- administrative and technical staff
- learning centre/information professionals

3.5 Action Planning: Deciding on priorities for change and further development.
In particular consider changes to:

- learning outcomes
- new/changed influences and drivers
- feedback activities
- feedback plan
- student support and communication
- choice of tool
- technical design
- contingency plans

These changes may be incremental or radical.

Limitations of the methodology

The methodology could be perceived as a formulaic approach to the design and implementation of online feedback and assessment. It could be criticised for being overly simplistic and overly prescriptive. We hope not. ‘Good teaching is not about applying predetermined recipes, techniques or templates to learning and teaching situations. Each learning and teaching situation is unique. What is required is an understanding of some general principles for good learning and teaching, careful monitoring of what students are experiencing in their learning situations and how

they are doing so, and the awareness of a range of responses that can be made to emerging situations' (Prosser and Trigwell, 1999, p168). We hope the methodology outlined here contains some of these general principles for good learning and teaching and that the methodology will promote discussion of alternative approaches.

Continued development of the methodology is likely to focus on student choice, student support, and on quality criteria for online feedback.

Evaluating the Methodology

The role of workshops: An ongoing programme of workshops will be used to continue to evaluate and develop the methodology by comparing the methodology to the current practice of academics.

The role of case studies: Case studies will be used to perform in-depth studies of current practice and to compare this with the methodology.

Case studies will also be used to critically evaluate the effectiveness of the methodology when it is used to design and perform online feedback and assessment programmes.

The role of literature reviews: We will continue to compare the methodology to published material that relates to feedback, assessment, online learning environments, online feedback and CAA.

Conclusions

The methodology described here is a snapshot of work in progress. We hope the methodology raises some of the key questions, issues, assumptions and constraints that impact on the use of online feedback and assessment. We expect the methodology to develop and evolve as we are able to incorporate new thinking into the model and as we are able to question our assumptions and approach.

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