



Formative Feedback to Improve Learning on a Teacher Education Degree using a PLE

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OVERVIEW

This paper addresses theme 1 but also spills over into themes 2 and 3. It reports on an action research project involving structured, formative assessment processes, within a personal learning environment (PLE), to address concerns about effectiveness of previous course delivery. The project ran during session 2006-07 involving the use of a series of tutor mediated self and peer assessed core tasks associated with five distinct learning milestones. These were associated with identifiable blocks of lectures delivered by different staff involved in the programme. The series of Core Tasks placed progressively increasing demands on students so helping them develop more sophisticated learning skills as the year progresses. The PLE was used as the medium for self/peer assessment processes and also for tutor feedback and mediation.

INFORMATION ABOUT THE CLASS, MODULE OR PROGRAMME

The project was conducted in the first year education studies module of a 4 year teacher education degree for students intending to teach in primary schools in Scotland involving over 160 students per year. The content of the module ranges over various theories of development of children and the psychology of learning. The course was identified in feedback as being a “difficult” class. Tutors saw a problem of lack of engagement with content and disappointing quality of resulting student work.

DESCRIPTION OF THE CASE STUDY

The main strategy was designed to help students take greater responsibility for their own learning. Previous experience suggested that students had a passive view of the learning process with expectations that tutors could somehow provide them with all the understandings needed for a successful outcome.

Learning design was based on developing the use of formative assessment as an integral part of the learning process itself. Increasing evidence from literature (Black & Wiliam, 1998; Gibbs & Simpson, 2004; Nicol & Milligan, 2006) on benefits of peer and self assessment methods in improving quality of student engagement and achievement led to the proposal for an action research intervention in session 2006/07. This comprised the following elements:

- A self and peer assessment methodology supported by tutor mediation was adopted as the basis for formative assessment associated with each ‘Learning Milestone’.
- A PLE, used in other parts of the course, was adopted as the medium for implementing the formative assessment strategy. This specialised platform, known as ‘Pebblepad’, also presented the opportunity to make it easier for students to make links between different modules.
- Formative assessment designed around a series of 5 Core Tasks. Each Core Task was clearly associated with an equivalent ‘Learning Milestone’. Core Tasks were designed to allow incremental increase in the demands placed on students. The



unifying theme was to help students develop critical skills in considering differing theoretical perspectives on learners and learning presented in the lecture programme.

- Formative assessments involved student self and peer assessment using the Pebblepad e-portfolio system. Peer feedback on individual core task submissions was provided through the same system. The key process was the extent to which individual feedback was then used to inform a group synthesis response which was then subject to tutor review. Students needed to develop skills in monitoring the quality of their own work by active participation in the evaluation of the work of their peers. Tutor feedback to the group response was also made available on Pebblepad. Students were then able to compare their own original and group responses with the response on which tutor feedback had been provided.
- To maximise effectiveness of tutor feedback, this was provided to only one sub-group in a tutor's class for each Core Task submission. Different sub groups within a tutor group were identified as the focus for tutor feedback for each Core Task. Students were then invited to participate in further peer analysis and interpretation of the submission and its tutor feedback.

CONSTRUCTIVE ALIGNMENT

The starting point was to consider how students might perceive their own progress through the work. It was then possible to identify a series of 'learning milestones' associated with completion of specific blocks of work. This was made easier by the existing delivery programme where different lecturers were already responsible for separate 'blocks' of lectures over periods of three or more weeks at a time.

Appropriate formative assessment tasks could then be devised and associated with each identified learning milestone. It was this alignment of learning experiences in the course with identified learning milestones and closely related formative assessment tasks (Biggs, 2003) which was central to the project.

Formative tasks were seen as a progression with the levels of challenge for students increasing incrementally. These tasks were also designed so that the 5th in the series could effectively double as a summative assessment instrument worth 50% of the tariff for the final examination. This strategy aimed to help students perceive explicit value from their engagement with the entire formative sequence. It also aimed to reduce the overall assessment burden on both students and staff involved.

BLENDED LEARNING METHODOLOGY

The specific trigger for the innovation had been the realisation that an e-platform being introduced elsewhere in this undergraduate programme had potential to be used in a completely different way as a vehicle to facilitate self and peer based formative assessment processes.

There was no suggestion that the development would lead to a predominantly e-learning approach or that traditional approaches to lectures or seminars would be abandoned. What became clear however was that the new blend of methodologies involved had a feedback effect leading to subtle and sometimes significant changes in the normal operational practice across the whole range of learning experiences.



RATIONALE IN TERMS OF EDUCATIONAL IDEAS

One of the underpinning aims of the course redesign was to improve the quality of the students' learning behaviour and to develop in them an awareness of the benefits of reflective, self regulated learning - an awareness that would later be transferred to their classroom practice. Elton & Laurillard have commented;

'... the quickest way to change student learning is to change the assessment system ...' (Elton & Laurillard, 1979, p.100).

One sustainable approach, which meets the requirements of addressing the needs of large classes, is the use of self- and peer based assessment. Black & Wiliam, (1998), and Boud, (2000), have highlighted the necessity for the relationship between the formative process and the final summative product, to be made explicit to both students and staff. Boud repeatedly returns to this point. His latest publication, 'Rethinking Assessment in Higher Education' (Boud & Falchikov, 2007) confirms his belief that 'assessment, rather than teaching, is the major influence on students' learning' (p.3).

Another vital consideration was that this form of peer based assessment is sustainable in large classes, (Boud, 2000), provided that an appropriate course design, based on social constructivist principles, is in place to scaffold learning.

Nicol & Macfarlane-Dick (2006) and Nicol & Milligan (2006) offered models where seven principles of good feedback practice are used to construct a framework promoting development of self-regulated learning, based on formative assessment. Nicol & Milligan (2006) move this forward, examining how technology might support its application.

Analysis of research literature by Nicol & Macfarlane-Dick (2006) identified seven principles of 'Good feedback practice:

1. helps clarify what good performance is (goals, criteria, expected standards);
2. facilitates the development of self-assessment (reflection) in learning;
3. delivers high quality information to students about heir learning;
4. encourages teacher and peer dialogue around learning;
5. encourages positive motivational beliefs and self-esteem;
6. provides opportunities to close the gap between current and desired performance;
7. provides information to teachers that can be used to help shape teaching.' (Nicol & Macfarlane-Dick, 2006, p. 205).

Implicit within the structure, based on the work of Gibbs and Simpson (2004), is recognition of the need for effective assessment conditions which support:

1. ' individual and group responses that require regular study activity out of class;
2. responses for each core task that are staged over a number of weeks;
3. staged responses that require progressively deeper levels of students' understanding;
4. core task requirements that are clearly stated and are progressively more challenging.' (Adapted from Gibbs & Simpson, 2004, pp. 12-15).

The design of the intervention was such that students were required to co-operate by offering peer feedback to each other and then were required to formulate an agreed synthesis in which they shared ownership of their joint submission. Tutor feedback to the group would then need to be subject to a further reflective process of self evaluation.



To gain some of the efficiency advantages envisaged, tutor feedback for each Core Task was only to one student group for each task. This allowed tutors to make more substantive comments while at the same time other groups needed to reflect on how their own submissions compared with the one on which the tutor had commented.

The requirement to work together in randomised small groups was designed to have a further outcome in helping to develop the co-operative working social skills which have become increasingly necessary in the context of the future personal professional practice of teachers. Each student in a small working group was expected to take their turn at organising, co-ordinating and finally presenting the work of that group using the 'Pebblepad' e-portfolio system.

Core Task submissions were required within 7 days of the completion of the relevant section of work to ensure that the link was effectively maintained with each 'Learning Milestone'. To maintain the immediacy and relevance of feedback comment, tutors were required to post their own feedback comments within the same timescale of 7 days. This ensured that students would be able to reflect appropriately on the work before becoming too absorbed in the next area of work and new Core Task.

This combination of design features involved allowed to intervention to address the seven principles identified for good practice by Chickering and Gamson, (1991)

EVALUATION

A key aim of the project was to develop reflective, self-regulated learners who assume responsibility for their own learning. To help students develop these skills, they needed opportunities to set their own targets and work towards them. The resulting process has made gains not only in course content but also in implicit outcomes of enhanced professional social development. It should be emphasized that these social outcomes were not an explicit product but an implicit process based outcome arising from the particular process of peer based formative assessment involved.

A blended learning strategy provided opportunities to bridge traditional and e-learning approaches. Students and staff had to be aware of the challenges involved and provided with strategies allowing them to experience success. No matter what blend of traditional and e-learning approach is used to promote learning, its effectiveness needs to be underpinned by rigorous planning and constant monitoring.

'...Substantial modification to the learning environment through changes to regular classroom practice involves turning the learning culture around.' (Sadler, 1998, p. 77). This 'turning the learning culture around' has been slow to reach the higher education sector, but recent developments discussed by Boud, (2000), Biggs, (2003), Gibbs and Simpson, (2004), Gibbs (2006), and Nicol & Macfarlane-Dick (2006), might indicate that a change of direction is beginning to take hold.

To maximise impact from such developments, higher education institutions need to find ways to promote formative assessment both to improve effectiveness of student learning and also to make efficiency gains in staff deployment. Students and staff need to be aware that, not only are they learning about learning from a conceptual viewpoint, but that they must engage in reflection on their own learning. The intervention has provided opportunities for students, and staff, to develop knowledge, skills and understanding of the entire learning process and of metacognition.



Students have generally felt empowered, but there are some for whom the process has been painful,

‘I appreciate the necessity and advantages of working in groups, but this only works if all groups have the same commitment and level of input. Group work does not place the same incentive to study as individual work which is submitted and assessed individually.’ (Student, aged 39+).

Peer feedback has played a crucial role - a role supported by tutor mediation and by the e-portfolio system. Underpinning the success of this particular blend of methods has been the extent to which students and staff engaged in the peer assessment process. Learning outcomes for every aspect of the course needed to be made explicit for both staff and students. Students also needed guidance in identifying standards/ criteria to apply to their work and in making relevant evaluation of their work in relation to these standards (Boud, 2000). The experience of staff in making such judgments has provided the essential scaffolding for the student learning process.

Students showed preference for peer feedback over that offered by tutors. This could show effectiveness of the methodology in developing self regulating reflective skills with implications for tutor involvement. It could be argued that this outcome is beneficial for a system of higher education where classes are increasingly large and diverse and where tutors face increasing pressures and demands on their time.

In apparent contradiction of this, many students also expressed the desire to have individual feedback from tutors. Re-assurance from tutors at this early first year stage of an undergraduate degree was still valued and it would be interesting to investigate whether in their second year the same students are more willing to be self regulating and to show greater confidence in peer processes.

The use of blended learning to support the development of reflective, self-regulated classroom practitioners who are skilled in formative assessment strategies requires further research and development. Scope exists for slightly different implementation strategies according to the choice of e-platform used and again additional research could prove useful in examining this.

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Appendix 1

RESEARCH METHODOLOGY

The project aimed to bring about changes in the organisation of the module and, early in the planning process, it was agreed that action research was the most appropriate design due to its ability to support a process of change in which the researchers would be active participants. The project would also be subjected to on-going development throughout its implementation.

The merits of action research as a method of improvement and involvement in educational settings have long been recognised. Robson (2002) highlights the emancipatory nature of its purpose:

‘ ... It adds the promotion of change to the traditional research purposes of description, understanding and explanation ...’ (Robson, 2002, p. 214).

Due to this underlying purpose, many of the best known action researchers in education have been practitioners in that context, or have been professional researchers supporting practitioners who wish to initiate change in the setting in which they work. Despite the fact that Kurt Lewin (1946), the researcher who coined the term “action research”, was investigating organizational change in non-educational settings, the method remains popular among educators. Stenhouse (1975) in his seminal text, “An Introduction to Curriculum Research and Development”, relates the usefulness of the method for educators. Elliott (1991) and Norris (1990) strongly advocate the approach. Kemmis and Wilkinson (1998) describe action research as a cyclical process, an approach developed further by Bassey (1997) who offered a very detailed outline of the various stages involved. Fullan (1982, 1991) highlights the importance of the process itself and latterly, McNiff and Whitehead (2003) comment on the ability of action to improve practitioners’ practice *and* learning. Somekh (2006) argues for

‘...a process of ‘dialectical interpretation’ that generates a substantial body of knowledge, communicatively validated and capable of becoming the basis for action.’ (Somekh, 2006, p.30).

Action research has not been without its critics, Adelman (1989) questions the quality of educational action research, calling it ‘inward looking and ahistorical’ (1989, p.179) Atkinson and Delamont (1985) question the rigour of the approach.

Despite these criticisms, action research remains one of the most effective ways of bringing about change in educational settings and was the method chosen by the research team who considered Bassey’s approach to be the most appropriate because of the detailed structure it provides:



1. Define the enquiry	The director of the course was concerned by issues arising from student and staff evaluations of the course.
2. Describe the situation	Student engagement in the course was variable. There was a lack of standardisation in approaches to formative assessment of student portfolios by staff and students alike and that there existed a mismatch between tasks associated with course lectures and the final summative exam.
3. Collect evaluation data and analyse it	End-of-year student survey questionnaires and staff evaluations were analysed.
4. Review the data and look for contradictions	Although the students commented that peer feedback helped their learning, they also requested more individual comments on written work from tutors. The use of the e-portfolio was seen as one way of addressing this .
5. Tackle a contradiction by introducing change	The course was completely redesigned and a new tool for supporting students, the PebblePad E-Portfolio System, was introduced.
6. Monitor the change	Changes in the course structure and learning outcomes were monitored.
7. Analyse evaluative data about the change	A revamped end-of-year questionnaire was issued to all students. Student representatives and staff participated in focus group meetings carried out by external evaluators. The research team participated in a semi-structured interview conducted by the same evaluators. Quantitative data was analysed using SPSS. Qualitative data was analysed using NVivo.
8. Review the change and decide what to do next.	Case study evaluations produced by the external evaluators and by the research team informed future developments.



Appendix 2

DATA COLLECTION AND ANALYSIS

A mixed-method approach to data collection allowed both quantitative and qualitative data to be collected and subsequently analysed. Previously evaluation of the module was carried out using a questionnaire, issued to all students, following the final summative exam. At the end of the second semester this year, three weeks before the final summative exam, the process was repeated. A modified version of the previous questionnaire was used in order that some comparisons might be made between results. In the interests of triangulation, this modified version was created by research students from a different faculty of the university. These students were supported by input from external evaluators belonging to the REAP Project. Data from this questionnaire was subjected to descriptive statistical analysis, including missing value analysis, by a member of the module research team, using SPSS.

On the same occasion, a second questionnaire was administered, by the REAP evaluation team. This questionnaire was developed and analysed independently by the evaluators who also conducted focus group meetings, one for students, and one for staff. One of the evaluators also interviewed the two practitioner researchers. This qualitative data was analysed using NVivo. A case study evaluation was produced by the REAP team. The report created by the two practitioner members of the module research team formed the basis of this paper.

Preliminary findings from focus groups (anecdotal) and questionnaires (descriptive statistical analysis) have shown that, overall, the students were positive about this learning experience. Nevertheless, there are some significant anomalies. 72.2% of respondents reported that working collaboratively enhanced their learning, however, in spite of 67.5 % of respondents finding peer feedback helpful, only 50.9% found group feedback, offered by tutors, relevant to their own work! This would seem to imply that the students themselves have assumed the role of tutors for each other and are perceived as effective in that role by peers.

Table 1

I found the feedback from peers helpful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	18	15.7	15.8	15.8
	Agree	59	51.3	51.8	67.5
	Neutral	28	24.3	24.6	92.1
	Disagree	7	6.1	6.1	98.2
	Strongly Disagree	2	1.7	1.8	100.0
	Total	114	99.1	100.0	
Missing	999	1	.9		
Total		115	100.0		



Table 2

The group feedback I received was relevant to my own work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	5	4.3	4.4	4.4
	Agree	53	46.1	46.5	50.9
	Neutral	30	26.1	26.3	77.2
	Disagree	20	17.4	17.5	94.7
	Strongly Disagree	6	5.2	5.3	100.0
	Total	114	99.1	100.0	
Missing	999	1	.9		
Total		115	100.0		

Students recognised that the process promoted development of professional skills. It became apparent, that whilst this had been achieved and peer based formative assessment had been effective in promoting reflection and self-regulation, there were still some challenges to be faced. Typical student comments were:

‘I liked working in groups for the core tasks. It helped me to understand things better when the group discussed it and bounced ideas off each other.’

‘The group work really helped me further my development and development of the content.’

It was recognised that use of the e-portfolio environment supported the blended learning process adopted in the module. 52.7% of respondents either ‘Strongly Agreed’ or ‘Agreed’ that this made an impact on their ability to engage in the course at a distance, but only 23.5% said it helped them organise their course work. Awareness of the wider benefits of blended learning appears still to be lacking and requires further research.

There was room for improvement in some significant aspects. Concern was expressed about lack of contributions made to group tasks by some students. Interestingly, there was a clear desire (82%) for increased tutor monitoring of group work processes:

Table 3

Teachers should monitor group work activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	33	28.7	28.7	28.7
	Agree	49	42.6	42.6	71.3
	Neutral	22	19.1	19.1	90.4
	Disagree	9	7.8	7.8	98.3
	Strongly Disagree	1	.9	.9	99.1
	12	1	.9	.9	100.0
	Total	115	100.0	100.0	



There was also a desire (64.9%), for individual written submissions to the group tasks, posted in the e-portfolio environment, to be marked by tutors:

Table 4

Marks should be awarded for individual contributions to group tasks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	26	22.6	22.8	22.8
	Agree	48	41.7	42.1	64.9
	Neutral	14	12.2	12.3	77.2
	Disagree	23	20.0	20.2	97.4
	Strongly Disagree	3	2.6	2.6	100.0
	Total	114	99.1	100.0	
Missing	999	1	.9		
Total		115	100.0		

Technical problems with the e-portfolio environment also caused some dissatisfaction with the process. In total, 68.3% of respondents either, ‘Strongly Disagreed’ or ‘Disagreed’, that they found working in PebblePad an enjoyable experience. The research team is keen to explore other avenues in this area, including alternative platforms/media.

Table 5

I found working with Pebblepad an enjoyable experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	8	7.0	7.0	7.0
	Neutral	27	23.5	23.7	30.7
	Disagree	45	39.1	39.5	70.2
	Strongly Disagree	34	29.6	29.8	100.0
	Total	114	99.1	100.0	
Missing	999	1	.9		
Total		115	100.0		

It is evident from the evidence above, that student engagement in different aspects of the course varied considerably. The research team is currently considering how these variations in experience might be minimised and welcomes input from interested parties.



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Please reference as:

Ross, M. & Welsh, M. (2007). Formative Feedback to Improve Learning on a Teacher Education Degree using a PLE. *From the REAP International Online Conference on Assessment Design for Learner Responsibility, 29th-31st May, 2007*. Available at <http://ewds.strath.ac.uk/REAP07>

Re-Engineering Assessment Practices in Scottish Higher Education (REAP) is funded by the Scottish Funding Council under its e-Learning Transformation initiative. Further information about REAP can be found at <http://www.reap.ac.uk>
