
Developing a Departmental Strategy to Improve Student Feedback

J.L. Horner (j.l.horner@lboro.ac.uk)

Loughborough University, UK

***Abstract:** In response to the National Student Survey, the Department of Aeronautical and Automotive Engineering at Loughborough University decided to improve both the written feedback given to students on coursework and the time taken to return marked coursework. This required discussing the students' expectations of written feedback with both staff student liaison committees and departmental staff meetings. Underpinning the development of the strategy was a strong wish not to impose a uniform approach on staff and also to make clear that a well designed feedback system can reduce staff time spent on marking rather than increase it. Examples of different approaches to feedback were developed and debated at staff meetings. Also discussed was the link between learning outcomes, marking schemes and the type of feedback to give students. With the individual investigative project modules, feedback sheets were developed to reflect the different expectations from BEng and MEng students as stated in the Engineering Council's UK-SPEC publication. It was agreed by staff that the minimum a student could expect was a generic feedback sheet for the whole cohort and that ideally all written feedback should be individual. To ensure both timely return of coursework and to allow spot checks of the level of feedback to students, a central coursework return point for staff was established. The department sees its strategy on coursework as an ongoing process and has improved the response from its students on feedback year on year as evidence by the National Student Survey*

Introduction

In 2005 the UK introduced the annual National Student Survey (NSS) that asked all final year undergraduate students across the country to comment on their degree programme. The students are given twenty-two questions or statements on a range of topics covering teaching, assessment and student support. They respond using a five point rating system that goes from strongly disagree to strongly agree with the statement. Five of the questions ask about assessment and feedback. Across the UK, the responses to the questions on feedback always receive the lowest "score". The results of the survey are made publicly available on a government website.

The Department of Aeronautical and Automotive Engineering at Loughborough University is one of five departments in the Faculty of Engineering. It has twenty-eight full time academic staff and an undergraduate population of around 580 students. Loughborough is a research-intensive university with the expectation that all academic staff engage in research of international standing. The department runs two undergraduate degree programmes, one in aeronautical engineering and one in automotive engineering. Both programmes are offered in the three-year full time study BEng variant and the four-year full time study MEng variant. In the UK MEng degrees are enhanced and extended undergraduate qualifications (Hibbert 2008). Some modules on the programmes are delivered to both aeronautical and automotive students resulting in student group sizes ranging from 180 for first year compulsory modules to 80 for some third year optional modules. In the first two years of the NSS, the department's score for the feedback question was considered to be poor and it was decided by the Department Teaching Committee (DTC) in that action needed to be taken for the academic year 2006-07. The author joined the department as a member of academic staff in 1991 and has chaired the DTC since 2000.

Approach

Quality of feedback and timely return of coursework had previously been left up to individual academic staff. Staff could choose to return coursework via the general office or directly to students. In practice this meant there was no central monitoring of whether coursework was being returned within three teaching weeks after submission as stated in the University Code of Practice. The DTC decided to take the following approach in order to improve feedback: -

- a) Discuss the concept of acceptable written feedback with teaching staff and the various mechanisms to provide written feedback;
- b) Discuss expectations of written feedback on coursework with the Staff Student Liaison Committee;
- c) Introduce a central coursework return process with a record being kept of when staff returned marked work;
- d) Monitor the written feedback on coursework and return to staff for additional feedback to be added if not meeting the minimum agreed standard.

It should be pointed out that the teaching staff in the department were used to the DTC instigating change through the use of discussion sessions and the handing out of examples to follow. Staff were more receptive to their colleagues leading discussion on the merits of different approaches rather than sessions run by central support services. The five members of the DTC had the credibility of all being successful teachers of analytical engineering subjects or design subjects. Several major changes to teaching processes had been instigated successfully and efficiently in this way. It is the accepted departmental view that the most effective use of staff time is to simply tell people what they have to do. Thus the possibly controversial step of returning coursework to staff to “redo” was considered to be acceptable and was unlikely to cause complaints.

Discussions on Written Feedback with Staff

At the start of the process, the majority of written feedback to students on coursework consisted of hand-written comments on reports. This ranged from some staff just putting a few ticks on reports to others providing very detailed comments. Also some staff appeared to comment more on the structure of the report rather than on the technical content. A small number of staff already provided individual typed feedback using for example mail merge. These tended to be staff that had also introduced more novel types of coursework and had set up automated marking for some of their coursework and had linked the marking to the system for producing feedback. The DTC took the view that a uniform approach should not be imposed on staff and that those who already provided excellent written feedback in whatever form should not be asked to change.

Staff were given examples of different approaches to providing individual written feedback already in use in the department. These were: -

- List of common mistakes;
- List of common mistakes with the errors made by an individual student circled;
- List of printed headings under which staff wrote their comments;
- List of comments in a word document which are then edited for each individual student;
- Use of various technical software packages to generate comments from spreadsheet data. This required the user to be already familiar with the software.

Although the purpose of the exercise was to improve the written feedback provided to students, the opportunity was also taken to demonstrate that a well designed feedback system can reduce the time that is spent on marking. The initial objection to developing the types of feedback systems listed above was the time taken to generate the bank of comments. This led to a discussion about how the bank of comments used for feedback should be directly related to the marking scheme for the coursework. Also it was discussed how the bank of comments used should be related to the learning outcomes for the module. It was stressed that feedback must not just be a list of negative comments but should also be positive about the students work. Thus for each part of the marking scheme it is possible to generate a range of feedback comments ranging from observations on work done well to pointing out when something is wrong. This also prevents the amount of feedback any student receives being simply a linear progression of many comments for a failed piece of coursework and no comments, or a single “well done” for an outstanding piece. An example of such a set of comments is given below in Table 1. These are taken from the set of feedback comments for the final year MEng module in Structural Vibration and are related a coursework assignment employing Statistical Energy Analysis

techniques. These points are related to the diagram of the system that is the first part of the assignment. Students must decide what subsystems to include in the diagram and include all the relevant inputs and losses.

Table 1: Example of Feedback Comments and Related Mark

Comment	Mark awarded out of 10
Your SEA diagram includes all the correct subsystems and reflects your assumptions.	10
Your SEA diagram includes all the correct subsystems	8
Your SEA diagram includes all the correct subsystems. You should also have indicated the internal losses η_{ii} .	6
Your SEA diagram includes all the correct subsystems. Remember to show the inputs	6
Your SEA diagram includes all the correct subsystems. You should have included losses for the air spaces. A value of 0.1 for all frequencies would be suitable.	6
Only show the energy paths you are considering in your calculation on the SEA diagram. Showing "zero" energy paths is confusing. It also reduces the usefulness of the diagram.	4
You should have included the air space in enclosure 1 as a subsystem.	3
You have shown the machine as a subsystem in the diagram. As you have been given the acoustical and structural power outputs from the machine, you do not need to treat it as a subsystem	3
You have not included the SEA diagram	0

It also was stressed that staff should not simply say that part of the coursework was wrong without telling the student why it was wrong. Also similar observations were made about deducting marks for incomplete work. If something was missed from the report then the student should be told it was missing and that marks could not be awarded for that section.

It was clear from discussions that there was reluctance from some staff to provide detailed feedback on reports as it could be passed to students in earlier years thus effectively giving some students an advantage. The department runs all its programmes with the option of an industrial training year. Thus it is very common to find students being friends with those in other years. It was agreed that this was the unavoidable consequence of providing good detailed feedback and that staff should try not to set the same coursework assignment year after year. It was also pointed out that students did not like staff setting the same assignments each year as they also felt it could give other students an unfair advantage. Some staff had already overcome this problem by using two similar but alternating coursework assignments or making some part of the analysis unique to each student.

After discussion, it was agreed by the staff that the minimum level of written feedback given to every student on every piece of coursework should be a list of the common errors made by the student group plus hand written comments on each report. Staff were told that all marked coursework was now to be returned via the Student Support Office and that the date of return to students would be monitored. Also all returned coursework would be checked for the minimum agreed feedback by one of the DTC.

Issues Associated with Individual Investigative Projects

The initial discussions with staff were focused on the coursework assignments set by each staff member for their own taught modules. There was also the issue of feedback on the individual investigative project modules. All staff mark project reports and were previously asked to provide feedback to students by writing comments on a sheet which was just headed "Comments". This had lead to a mixed approach to the feedback with different staff emphasising different aspects. Also there

was no clear distinction between the expectations of a BEng Student and an MEng student, The BEng programmes are three years in duration and a BEng individual investigative project is worth 30 credits out of 120 credits for the final year, so 25% of the available time. BEng students must complete the project in parallel with other taught modules and sometimes must master concepts before the same concepts are covered in lectures. Also as the semester system is used at Loughborough, this means all BEng students have to take a break from project work for exams at the end of the first semester. MEng students in the department undertake their individual investigative project in the fourth and final year of study. It is worth 50 credits out of 120 (42% of time available) and runs wholly in the second semester. MEng student finish formal lectures before the project starts and thus have covered all necessary material in lectures. Thus the BEng and MEng students are completing their projects under different circumstances and this should be reflected in the marking schemes and the feedback.

In the UK, engineering degree programmes are accredited by the various Professional Engineering Institutions (PEIs) as meeting the educational requirements for registration as a professional or Chartered Engineer. All PEIs use the Engineering Council specification for Chartered Engineer Status, UK-SPEC (Engineering Council UK 2004, EC-UK 2007) as the reference for assessing if a programme satisfies the requirements for accreditation. This is aligned to the UK's national qualification framework for higher education (Quality Assurance Agency 2004). In UK-SPEC the differences between MEng and BEng graduates are clearly articulated. The DTC used UK-SPEC to revise the feedback sheet for the individual investigative projects. Rather than simply asking for comments, the feedback sheet was redesigned to provide prompts to staff over the different expectations from MEng and BEng students. Examples of some of the prompts are given in Table 2.

Table 2: Example of Feedback Prompts

MEng – Technical Achievement - Background	Is the work put into context alongside other relevant work in the field and previous work analysed using an appropriate critical approach. Does the student show a comprehensive understanding of the techniques employed
BEng – Technical Achievement - Background	Is the work put into context alongside other relevant work in the field and are the techniques employed understood and appropriate?
MEng – Student Performance	Has the student demonstrated self direction in tackling the project and acted autonomously and professionally in planning and completing tasks?
BEng – Student Performance	Has the student managed the project and planned appropriately to complete tasks in a professional manner

This resulted in staff giving students much more structured feedback that covered all the learning outcomes of the module. It also stopped the practice by some staff of commenting more on the layout of the report rather than the technical aspects.

Discussions on Written Feedback with Students

The Departmental Staff Student Liaison Committee (SSLC) consists of student representatives from each year of each programme, academic staff and administrative staff. University Code of Practice states that the number of student members must be one greater than the number of staff members. This is to prevent students feeling outnumbered by staff and allow for free debate. A year after the discussions with staff detailed in the previous section, the student members of the SSLC were asked for their perception of the standard and quality of the written feedback on coursework. They were assured that their comments would be taken to a Departmental Staff meeting for discussion and that all comments would be reported anonymously. The students were very vocal in their views and made the following key observations: -

- They want feedback on coursework to tell them what they needed to have done to get the next grade up (this was the strongest message from the group);
- Generic feedback on the module was not liked as the students did not know which comments applied to them;
- They were aware that most “individual” feedback was the result of staff editing or selecting comments from a bank of comments. However this was considered perfectly acceptable.

Students were asked again the next academic year and made the following comments: -

- Students would prefer to be given percentages for coursework rather than a letter grade;
- Students liked the practice of some lecturers where a breakdown is given on what each grade means and what input is appropriate to achieve the grade;
- There was a perception that staff award marks for coursework relative to quality of the work handed in by the group rather than against a set of predefined criteria.

Each time, students were also asked if coursework was being returned on time. Comments were that it had got much better but still could be improved. Most of these comments related to coursework handed in before a vacation break with the students having an expectation that it should be ready for collection on the day they returned to University. They struggled with the concept that some staff would not mark coursework over the vacation and that this was considered acceptable practice.

Issues with Implementing Strategy

The central coursework return system was set up by simply asking all staff to return marked coursework to the Student Support Office. The staff there would then record the date the coursework was given to the office and then not return the marked work to students until the written feedback associated with the coursework was reviewed by a member of the DTC. There were issues that some staff were not happy using a central coursework return system as they wanted to return work in lectures. It took about two years for those staff to finally use the central system. Their change of view was usually motivated by the distance they would have to carry the coursework rather than a belief that the central system was better. An unexpected side effect of the central system was the problem of managing the workload of the coursework return system on administrative staff. In first year of the system, staff would e-mail the student group themselves saying that coursework was ready for collection. In some cases the staff then did not actually return the coursework to the Student Support office until a few days later, leaving the administrative staff to deal with indignant students. Also some staff sent out their e-mail just before the office closed for the day thus preventing the administrative staff finishing work on time. Once the system was changed to the administrative staff sending out the e-mail to students the system greatly improved. It also allowed the administrative staff to spread out the return of coursework throughout the day and preventing students waiting in long queues to collect work.

When staff collect their coursework for marking, they are also given a list of the students who have handed in work and on top of the list is the date the staff member is expected to return the marked coursework. This simple approach of giving each member the date when each piece of coursework must be returned by has improved the return rate. In the first year the system operated, administrative staff also used to verbally remind staff that a deadline was coming up. This was not considered necessary in later years as most staff were returning work on time. There are still some staff that return work late but the amount of days overdue has reduced. In the case of persistent offenders the DTC spoke to them to ask the reason for the late return. This resulted in some coursework assignments being restructured to make the marking more efficient. For example changing from simply asking the students for a “formal report” to specifying exactly the structure and expected contents of the report. The students have also appreciated this move to more structured coursework assignments. Also the departmental workload model for teaching is structured to allow a certain marking time allowance for different types of student. For example a first laboratory report worth 20% of a module mark must take less time to mark than a final MEng technical report on an open-ended problem worth 50% of a module mark. The argument that staff must structure the coursework to be marked in the time allocated convinced some staff to change.

The contentious part of the strategy was the reviewing of the written feedback on reports. Staff knew this was going to happen in advance and had collectively agreed to this in a departmental meeting. When reviewing the returned coursework for Semester One of the first year of the strategy, two sets of coursework were considered to not meet the minimum standard. In coming to this decision all three members of the DTC who were reviewing coursework checked the feedback. When the coursework was returned to the staff concerned there was some resistance to “redoing” the marking. In both cases

the staff concerned had written minimal comments on reports and were asked to produce generic feedback sheets containing lists of common mistakes. Both produced the additional feedback, admittedly one much more quickly than the other. It was also made known to all staff that some people had been asked to improve their feedback. At the annual review of teaching provision this approach was discussed with senior faculty staff who expressed surprised that the DTC had actually returned coursework to staff.

The “policing” of the marked coursework has been reduced in the last year. Staff whose written feedback was just acceptable are still checked. It must be admitted that some written feedback could be improved even more and that generic lists of coursework errors should be phased out.

Evidence of Success

As the objective of the whole strategy was to improve the response in the NSS for feedback, then the NSS results must be used to determine success. The following table shows the aggregate score for the “Assessment and Feedback” bank of questions for the four years that the NSS has been run. Also given is the number of students in the department who were asked to complete the survey and the response rate. This information was not made available for the 2006 survey but could be expected to be similar to later years. The strategy outlined above was introduced at the start of the 2006/07 academic year in October 2006. Final year students were asked to complete the survey over the period February to April 2007. This is the data shown in the 2007 column. Also shown is the university score for the same bank of questions.

Table 3: NSS Score for Feedback and Assessment

	2006	2007	2008	2009
Number of Dept Students	-	99	125	111
Response Rate	-	76%	70%	73%
Department	3.3	3.6	3.7	3.8
University	3.7	3.8	3.8	3.9

As can be seen from the table, the department score improved in 2007, the first year the strategy was implemented. It should be noted over the period 2006-2009 there was no significant change to the academic staff in the department and mostly the same members of staff throughout the period taught the same modules.

There are five questions in the “Assessment and Feedback” bank, two of which relate to marking and three related to feedback. Looking at the responses to the three questions on feedback shows the following. From the NSS data the university receives it is possible to know the average result for each question and the number of students who gave a positive reply to the question. It is not possible to break the data down by programme. Standard Deviation is given for only the 2008 and 2009 responses as these were the only ones for which the author had the full data set.

Table 4: NSS Score Question 7 “Feedback on my work has been prompt”

	2006	2007	2008	2009
Average score	3.1	3.5	3.8	3.9
Positive reply	25%	59%	74%	70%
Standard Dev.	-	-	3.4	3.3

Clearly the student perception of the time taken to return coursework has changed. Students in the 2007 would have only experienced one year of the strategy where the 2009 students would have had the benefit in earlier years. It is debatable whether it is possible to improve on the 70% positive reply without addressing some students’ expectation that all coursework handed in before a vacation break should be returned on the first day back after the vacation.

Table 5: NSS Score Question 8 “I have received detailed comments on my work”

	2006	2007	2008	2009
Average score	2.9	3.5	3.5	3.6
Positive reply	33%	61%	58%	58%
Standard Dev.	-	-	3.8	3.0

Table 6: NSS Score Question 9 “Feedback on my work has helped me clarify things I did not understand”

	2006	2007	2008	2009
Average score	2.9	3.1	3.4	3.6
Positive reply	33%	46%	57%	64%
Standard Dev.	-	-	3.8	3.4

The responses to Question 8 and 9 should be considered together. Again it is clear that there is a marked change between the 2006 response and the 2007 response for both questions. It appears that the students' perception of having had received detailed comments has stayed constant over the period 2007-2009. In contrast the students' perception of feedback clarifying issues has steadily increased rather than going through a step change from 2006 to 2007 onwards. The University has taken measures over the last couple of years to make clear to students that feedback is not simply written comments on coursework. It is not possible to know whether the steady increase in the positive response to Question 9 is a result of improved written feedback from departmental staff or a change in the students' concept of what is meant by feedback.

The NSS also allows students to make textual comments on each set of questions. The response to these is summarised centrally in the university and then circulated to departments. In 2008 a few students made textual comments which related to the above three questions which implied that the students could not understand the rationale for marks on returned coursework. In the textual responses to the 2009 survey there were no comments that could be related to the above three questions. All the comments that students made under the “assessment and feedback section” related to feedback on exams, group coursework or coursework loading.

Concluding Remarks

The objective of introducing a department strategy to improve feedback was to improve the department's score in the NSS. As detailed in the previous section, the score has improved since the implementation of the strategy. It is unlikely that further improvement is possible without another major shift in policy, for example insisting that all written feedback is individual and ceasing the practice of generic feedback sheets. Also it is always difficult to deal with the perception of students that staff should spend vacation time on marking and that coursework handed in before a vacation will be marked for the start of the next term.

References

- EC-UK (2007) *Guidance Notes on Academic Accreditation*. London: Engineering Council UK
- Engineering Council UK (2004) *UK Standard for Professional Engineering Competence: The Accreditation of Higher Education Programmes*. London: Engineering Council UK
- Hibbert L (2008) Training Focus: Degrees of Separation. *Professional Engineering*, **21**(6) 43-44.
- Quality Assurance Agency (2004) *QAA Framework for Higher Education Qualifications in England, Wales and Northern Ireland*. Quality Assurance Agency for Higher Education

Copyright © 2009 J.L Horner: The author assigns to the EE2010 organisers and educational non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The author also grants a non-exclusive licence to the Engineering Subject Centre to publish this document in full on the World Wide Web (prime sites and mirrors) on flash memory drive and in printed form within the EE2010 conference proceedings. Any other usage is prohibited without the express permission of the author.