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Assessment of lecturer's ‘Coursework’ by students

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Assessment of Lecturer's ‘Coursework’ by Students

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Subject area: Engineering design; topic area: Drawing to BS 8888

Background

This design module is taken by students in the first year of two degree programmes, BEng. in Automotive Engineering and BEng. in Automotive Design Engineering; the main aim of the module is to ensure that students are able to draw to BS 8888 and communicate design ideas. This report mostly concerns the former course, which has a class size of 44 students. The students have normal entry qualifications, they are not assumed to have previous experience in design drawing, they are mostly recent school-leavers (there are no mature students) and mostly from the UK. Interviews with some students from Automotive Design Engineering degree cast light on how student perception of the approach depended on the student's previous experience or interest in engineering design.

This report concerns a classroom activity for which the lecturer produced a set of incorrect design drawing coursework that was given to the students to mark. The activity used a session that would usually have been dedicated to practical drawing work, and which took place in the usual room for this session. Students had been warned beforehand that the session would involve "*something different*". At the start of the session the lecturer hands out the "*coursework*" and asks to students to identify any errors in it, most students are able to start straight away, though a few require further help from the lecturer to understand what they should be looking for. The students work individually on this task, though they talk to each other, comparing which errors they have found. After 20 minutes or so most students have found all the errors they are going to, and the tutor takes feedback: an overhead of the drawing is shown and the class is asked to call out the errors that are in it; the issues raised are discussed if necessary. The exercise is then repeated with a more complex drawing. At the end of the session the students keep their copy of the drawings for reference and are told by the lecturer that now they are able to identify these errors she does not expect to see them in any student's work. The exercise is not assessed.

Reasons for introducing this teaching method

The lecturer had found that the same basic mistakes were being made in her students' drawings year after year. She has tried addressing this issue with stronger emphasis in lectures, but this had no impact. The sort of attention to detail required in drawing to BS 8888 could lead to the subject being rather dry and boring, the lecturer believed that this approach actively engages the students while remaining fun for them: "*I wanted it to be fun, I hoped that they would enter into the spirit of things*".

Lecturer Perspective

The lecturer found the preparation required for this exercise to be straightforward; it can be carried out in the normal teaching setting and requires no special timetabling or resource provision. She did report problems encountered with the process of photocopying the drawings when introducing errors into the drawing.

The lecturer has found that this subject cannot be taught by talking about it: it's a practical subject which requires the students to be doing something. She believes that this exercise gives her students a clear task with which they can engage. She has found that the exercise motivates her students to pay attention to detail "*they really do like to find fault [with my work], it seems to give them a sense of enthusiasm. In fact they've said so*". She has also found that the light-hearted approach improves staff-student interaction. A similar exercise for a Computer Aided Design course was found to help reduce the number of common errors in her students' work.

Student Perspective

The questionnaire results show that the students agreed that the exercise was useful in helping them understand where they were making errors: there were many reports of aspects of drawing for which the students found the exercise useful. In the focus group one said "*this shows what you really do know and what you don't know*". The students liked the new perspective, the light-hearted approach and the engagement offered by the exercise. They reported that it "s*howed how hard it was to make a mental image if just a couple of things were out*", and that: "*if tutor had only had the drawing on the projector and said 'this is wrong, this is wrong, this is wrong...' it would have been in one ear and out the other and out the door ... by actually doing it our selves ... it gave that extra re-enforcement of what she was telling us*"

The students also appreciated the self-assessment element of the exercise, which was listed as one of the most useful aspects; one commented that s/he could see errors in the lecturer's drawing which s/he wouldn't have seen in their own work. The students also appreciated the reference resource that the corrected drawing provided.

The questionnaires were broadly neutral on the question of motivation—so, while the students didn't report that the exercise increased their motivation to learn, they didn't find the exercise boring. This is probably an improvement on any attempt to cover the same ground in a traditional lecture, in the focus group one student said the approach was "better than coming and knowing that it was going to be the same monotonous lesson" but there were reservations: "*it's not something we will end up doing .. marking other people's drawings*".

There was a certain amount of repetition of errors in the drawing to which the students objected. Within each drawing there might be many instances of an error, which, while it better reflects the effect on a drawing of making a systematic error, caused the students to be uncertain as to whether to count the error once or many times and perhaps distracted the students from looking for further errors. Students were more critical of the second drawing, which was a more complex drawing with similar errors to the first. While it demonstrated how simple errors can render a drawing almost incomprehensible, students felt that it would have been more useful to have a drawing of similar complexity to the first but with different, more subtle errors.

Issues

- Some of the more able students from the engineering design course found the exercise trivial, other students clearly found parts of it challenging.
- Students were somewhat frustrated by what they viewed as needless repetition of errors, both in a drawing and between the drawings.

Benefits

- Both lecturer and students report that this exercise leads to an improvement in the quality of students' drawings which could not be attained through conventional lectures or coursework.
- The exercise is successful in improving staff-student interaction and in bringing life to a lesson covering some rather pedantic material.
- The students appreciated the self-awareness fostered by the exercise and the reference material it provided.

Reflections

On the whole this exercise successfully addressed a sticking point in many students ability to produce technical drawings to the required standard, and it did so at little cost and in a way that provided the students with a lively, engaging and fun learning experience.

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