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POSTGRADUATE CERTIFICATE IN TEACHING IN HIGHER EDUCATION

Cylch Dysgu 2 | Teaching Cycle 2

Feedback About What Students Learn

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with a set of classes (this is object oriented programming jargon, sorry) to solve the problem at hand. Arriving at some general consensus or evaluating what the general consensus is is not easy. Next year, I will hand-out one post-it to each group and ask them to write down their design. I will then collect the post-its and classify them to get that global view.

2.2 Cycle two: Feedback about what students learn

An important bit of information I need from the students is what they get from my lectures. This is not just about factual information but more about the overall picture of the subject. In the modules I am more involved with (CS32110: INTERACTIVE COMPUTER GRAPHICS and more particularly CS35310: INTERACTIVE MULTIMEDIA SYSTEMS), there are many ideas students cannot pick if they do not integrate several lectures, relate different topics and, in general, think about what I tell them (see Section 3.4).

I cannot really ask them because their answer would be biased. The only moment I can get this information is when marking the scripts, but this is obviously too late.

I started having that need when, and possibly because of, discussions related to that were happening in the department. This was when Dr Mark Ratcliffe was working on MAP, the tool he (and others) developed to help with formative and summative assessment. However, that tool only allowed multiple choice questions and I wanted more general questions. I thus decided to try Blackboard, the application chosen by Information Services to “help” lecturers create a Web interface for the content of their modules. Blackboard also has an assessment part to it that allows setting questions like multiple choice, fill-in the blank, small essay, etc. Apart from the small essay, all the other question types had automatic marking and provision for feedback for students in case they failed questions. This was very appealing because evaluation of the students’ answers would not imply hours of work.

During the introduction lecture, I publicised the fact that I would provide a number of quizzes for the students to answer at the end of each part of the module. I also said that we would discuss their answers in the following lecture. And I did prepare questions and reminded them of that during lectures and by email.

From that experiment, I was hoping to get a “big picture” about what students understand, whether they can abstract general ideas and also push them to read my slides and the book to get more information as we proceeded, not one week before the exam. Getting this would mean that the idea was good. I was not expecting to get that at the end of the first part, but was hoping to see some improvement as we were making progress, as well as to see more involvement from the students during the lectures. So I did try to write my questions so that I would promote that, at first using mostly the type of question with automatic marking.

This has been a complete failure. Actually, maybe not, but I am not sure (see below). Unfortunately, I cannot include any data because, despite their assurances that this would not happen, Information Services are not able to give me all the statistics that Blackboard
produces about the level of access of the documents, about the marks students get for the different quizzes, etc. Even getting the content is apparently not possible without a lot of work, work they would charge for. I do give some figures here and there. They are more to give an idea than to provide accurate information.

The main failure was students’ participation. Only a very small proportion of the students did try to answer the quizzes I created (less than 10%). This possibly is due to several reasons, which I discuss later.

Second, Blackboard is extremely unreliable and/or not robust at all. Of the students who tried, many did not finish because of a crash of the system during their answering of the quizzes. The only way to solve that was for me to go in the system and cancel their taking of the problematic quiz to allow them to retake it, thus loosing the part they already did.

Finally, and most importantly, multiple choice questions (or fill-in the blank questions, or any of the automatically marked question types) are not very appropriate to what I wanted to assess. This meant that, at the beginning, the questions I wrote were not good, not providing the right feedback and, at the end, implied manually “marking” all questions because either Blackboard was not marking correctly the questions (it can do, or at least used to do, some weird things with the feedback and the marks) or because I then tended to use short essay types of question, which need manual marking and feedback providing.

I attribute the lack of participation of the students to several causes:

- The first cause is that when something does not count toward the final mark they get for the module, student don’t do it! Or they don’t try hard. Of the few who actually tried, some answers clearly reflected that (no time taken to think about the issue raised by the question). This is something most lecturers notice and try to counter by telling the students that it is in their interest to do these things, even if they don’t get marks for them. And this is particularly true of the practicals (see Section 3.2).

- Blackboard’s way of marking is sometimes strange. At least is was the case at that time and may not be the case anymore (Information Services upgraded the system over the summer 2003). For example, the fill-in the blank type of question allows the person creating the question to specify different good solutions. However, the given answer has be one of the provided ones for it to be considered true. In particular, misspellings give wrong answers, which may make sense, but also the unexpected words having the same meaning. Something similar happens with other types of questions, e.g. the ordering ones. This meant either that students were getting marks that were not representative of their answer^4 or that I had to spend a lot of time manually fixing these problems. Because of problems like that students stopped answering my quizzes, despite my saying that marks were not the important bit.

^4Blackboard, at least the version I was using, has to give a mark.
• Unreliability of Blackboard was another problem that deterred the students.

However, that experiment might not have been a complete failure because, that year, students were a lot more willing to participate during lectures than the following year where I did not use Blackboard. This may not have anything to do with that, but on the other hand this may.

I will possibly try again when Tweek (a similar system, only better, developed by Dr Mark Ratcliffe) will allow more general question types than multiple choice. Another idea I might try is, instead of giving questions and expecting answers, to ask them to write questions that they feel are interesting and them have them to discuss and answer them during lectures. A good incentive could be to use some of these questions in their final exam!

2.3 Cycle three: Less intimidating slides

One of the modules I am involved with is the “211 series” (variations on CS21120: ALGORITHMS AND DATA STRUCTURES for different audiences: second year undergraduate in Computer Science (CS21120), second year undergraduate in Internet Computing (CI21120) and post-graduate on the MSc conversion course (CH21120, was CSM0320). One of the two parts I teach in these modules is 'Graphs'. These are data structures that can be used in many applications and involve many different algorithms. My intent was not to talk about implementation details, which would take too much time, but to present different algorithms to perform different important tasks with graphs. So I looked at how this was presented in different recommended text books, chose one, and used it to produce my slides. It happens that graphs are heavily based on the sets theory (a mathematical theory) and as such can be very concisely explained using the mathematical formalism of that theory. I was familiar with that formalism and all books use it to some extent. Because of that and because it allows for very concise slides, I decided to use the formalism to write the algorithms on my slides. However, understanding that this could be a problem for some students, I explained all the algorithms using plain English during the lectures. This was during the first time I taught this module (semester 2 of 2000-2001).

A few students (only the MSc ones) said that they had problems with the formalism while I was teaching it and I did explain it in more details to these. However, as the post-its game (Section 6.1.1 pages 63 and 65) shows, the problem was a lot more general. However, some students did recognise that once they passed the step, it was very easy to understand the algorithms. The problem really seemed to be that students were intimidated by the mathematical formalism. Interestingly enough, this was not reported in the questionnaires (Section 6.1.4), which seems to say that it was not a so big problem! However, the proportion of students attempting the ‘graphs’ question in the exam was low, I then thought, and I attributed that to the mathematical formalism.

\[5\text{That degree scheme has only recently been created and there were no students on the degree scheme in their second year when I started teaching the “211 series”}\]