Strange but true! 2nd year undergraduates chat all night online about logic course.

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Thanks to the students of F22HO2

Me and the course material

I'm a new lecturer at Heriot-Watt. My research expertise is in formal logic.

Last term (January-March) I taught the F22HO2 'Formal Specification' module. That was my first time lecturing.

I though that explaining logic to the students would be hard, because they might find it rather abstract. (I was wrong.)

The course

F22HO2 is for second year undergraduates, taught in term 2 of year 2.

It is all about applying formal logic to specify the behaviour of computer programs.

It's a tough course.

The students

Second year undergraduates aged 19 to 20. All male. (I think that tells us something worrying, but I'm not sure what.)

They had done one previous course in logic. This was important; they had not necessarily understood the material first time round, but second time round the basics were there.

Flexible learning; videos

There is interest in my department to record lectures, but it's in trials.

I heard about the trials, thought it was a good idea, and decided to do it by myself.

I took videos of my lectures with a mid-range digital camera. Minutes after the end of a lecture, the video was online.

Flexible learning; videos

Some students have to travel up to two hours to get to the campus.
Some students have to get out of bed.

Both groups find it hard to attend all lectures.

The videos were wonderfully useful. The students were emphatic and consistent about this.

I watched the weblogs; files averaged 20 downloads a week, and in one week (just before a test) it reached 150 downloads.

The youtube generation.

Flexible learning; videos

I heard it said that audio recording is as effective as video.

I disagree — with video, you can see what I'm pointing at.

It may also be that watching a little Jamie figure jump up and down gesticulating like a hi-tech low-res muppet, helps the viewer to stay awake.

It takes up far more bandwidth, though.

Flexible learning; videos

Two students missed the first half of the course.

One had personal problems. The other had been 'on a skiing holiday'.

They asked me to tutor them to help them catch up.

I could just say 'go watch the movie'. This alone recouped the time lost to the logistics of filming.

Teaching the course

The course material was easy. It was clear by the end of the first week that anybody who worked, could pass.

But then they didn't turn up to the first problems class. The students did not see a connection between their forthcoming exam, and the problems class.

This was serious. I e-mailed them all a letter:

Dear (names omitted),

You were conspicuous by your absence in the problems class today. Since you missed it, I would like you to do a little catch-up work. Please choose from one of the following options:

1. Write a 100-200 word essay on:

   In what shape or form it is in any way even remotely acceptable for me to miss class, ensuring that Jamie will have to go over the same damn basic things again and again for the next eight weeks until the course is over so that I can get on with failing my exams and living in brutish incurious ignorance for the rest of my life.

2. Give a list of 40 things that Jamie would prefer to be doing, other than 40 minutes cutting and pasting bloody e-mail addresses from one damn Firefox window to another and writing bloody e-mails.

There's a prize of a box of pralines for the essay or list that makes me laugh the most, and the winning entry will be posted on my webpage. (Judges decision is final.)

Response to the first letter

Half the students entered the competition.

They wouldn't do the exercises, but this they were willing to invest time in this.

All the entries were witty and inventive. Some were hilarious. You can read them online `www.gabbay.org.uk`.

It is not acceptable, even remotely, for me to miss class. I shall place the blame upon the following list of things:

Nature: For creating life.
Evolution: For instilling the instinct to self-preservation.
Compassion: For extending that instinct beyond one's self to others.
Cavemen: For living inside.
Architects: For developing on the idea.
NFPA: For introducing their specialised products.
Fire Alarms: For being one of those products.
Energy: For the lack of it.
Sleep: For being necessary to gain new energy.
Sleeping disorders: For not letting me sleep well.
Time: For passing.
Alarm clocks: For not being loud enough.
My High School guidance teacher: For convincing me to live on campus.
That person: For waiting until I had just gotten to sleep at 4am after lying in bed for four hours, setting off a fire alarm, having the building evacuated, and making me stand in the cold so I took three more hours to fall asleep, slept through my alarm clock, and woke at 1pm missing my morning classes.
Myself: For knowing that the above is not a valid excuse.

Second letter

The following week's problems class had full attendance. But — no-one had done the exercises.

Aargh! I sent out another letter.

One response was brilliant (and very revealing). It's online.

Relationship with the students

By week three, half the students were doing work and asking questions in and after class.

Students tell me that their year is now more active in asking questions, also in other lectures. If this is the case, I consider it a job well done.

I changed their culture (I'll come back to that).

The message board

I started the message board in week 3, on my own webspace. It did not bear university markings.

The message board quickly filled with blog-style entries on topics ranging from F22HO2, to the (mis)adventures of a student band, to discussion of other courses.

One student offered a 10% discount voucher for a mail order sex toy site, on the message board.

Yes, they were trying to push my limits. I said nothing. They were hanging out on my message board.

Online teaching

I set all exercises on the message board, and asked the students to submit work online too.

It was easy for me to comment on students' work just by inserting comments into their text. I did this in real time, as the answers arrived.

The students tell me this was important: you could submit a solution or question and have an answer within hours from me, or from a fellow student.

Online teaching

I asked students to correct minor errors in solutions, and re-post new solutions if they made major errors.

The result was a series of increasingly refined answers to problems. The mistakes, as well as the correct answers, were documented online. Just as important, several different correct answers were available (by several different students). They consulted and commented on each others' work.

The message board recorded hundreds of views of solutions or non-solutions which I tagged as particularly relevant. These continue to be used for revision purposes now.

Relationship with the students

I created a fictitious student Nicebutdim. Nicebutdim served as an anonymous avatar for 'stupid questions'.

I also created Stew Dent, an anonymous avatar to answer Nicebutdim's questions.

Nicebutdim was used for technical questions — but also on two occasions to lambast my teaching.

There were a few long discussions about how I was teaching the course. I was quite open about what I was doing and why. They seemed to respect that, and it was better in writing; more participative.

Relationship with the students

The atmosphere on the message board, and to some extent in class, was exactly like the sixth form of my old (all boys) secondary school.

I can't say enough how much fun I had bantering with them. I'm sure that helped the course a lot; they were on my side.

Relationship with the students

Half the students were posting regularly and fluently.

And yes — some students did stay up all night discussing logic.

The spirit of self-expression was a pleasure to see, and it was my privilege to be there.

Effect of the letters

Half the students were active. What about the other half?

My teaching assistant (a sweet and gentle lady PhD student) took one of my classes. Students came up after lectures and asked questions, as they did with me — but this time it was students from the other half.

Obviously, some of 'the other half' wanted to do well but they were too scared of the material, and of me, to do anything about it.

I have invited my teaching assistant take the occasional class. I think she gives students something that I can't.

The importance of culture

My guess is roughly this:

A. 1/3 of the students work.

B. 1/3 of the students would work if they could overcome whatever blockage they have (shyness and lack of commitment, mostly).

C. 1/3 of the students will not work.

By the end of the course the good students were teaching themselves. My rôle was dispensing validation to the students (if they deserved it).

I think that's our only hook on these guys. We can't kick them out and it's increasingly hard to fail them. But they're teenagers, they need validation.

The karate kid

This is a film about a little boy who, frankly, is a weed and a pushover for most of the film.

However he wins the final big fight with a special (and thoroughly ridiculous) karate kick.

Real life doesn't work like that. Exams favour the prepared mind.

The students' underlying cultural assumption was that months of neglect could be made up in an 8 week cram. I was very specific that this was not the case, but culture can't be changed overnight.

The importance of culture

Not everybody is suited to higher education. But they're here anyway.

It's a huge waste of resources and of my time and when I rule the world I'll have those responsible executed for making a mockery of my job.

Until then, I must grin and bear it: half my students will fail.

Why will half my students fail?

The importance of culture!

Q. Can you expect to see a modal distribution; students cluster about a mean, with a tail of abilities on both ends?

A. No. I see a bimodal distribution; those who work, and those who do not. One half will pass, the other will fail.

Q. So your students will fail. Shouldn't you change the course/teaching/module/student support/measure of success/nature of time and space?

A. No. The course is fine. My teaching is fine. The university support is fine. It's an open secret that the measures of success are debased. Time and space are best we're going to get.

We should change the students.

THE IMPORTANCE OF CULTURE!!!

Students come to university with a culture of:

- Entitlement ('you can't force me to turn up/do exercises').

- Non-competitivity ('yeah, I failed again').

- Fear (student freezes motionless and petrified when I ask a qustion).

(One thing I'm grateful for: so far, I have had no actual discipline problems. It'll happen one day, of course.)

THE IMPORTANCE OF CULTURE!!!

Culture influences what we hear. We're always accommodating incoming information to our existing framework.

We must not say to students 'it's your responsibility to work'. They just hear 'you have my permission not to work'.

We have to create a distinction in the minds of the students, which they do not currently have:

I can go out and steal an old ladies handbag. I might even get away with it. But I don't have anybody's permission to do so. Likewise, a student can fail to work. But we must make clear to them that this is (in our opinion) obscene.

I actually think I managed to do that in this course.

Summary

Videos.

Banter.

Participative, real-time, online marking.

Message board which the students feel is their territory.

Social engineering. Universities should systematically foster a culture of duty, competition, and curiosity.