**ID\_MI01\_F\_Maths**

**REC020\_F\_NS\_Maths**

I would you give a brief background about yourself as a lecturer?

MI01 I’m here in Southampton since 2001, about 14 years and I’ve been teaching foundation year for 13 years (laughs). Before that I spent about 10 years in Germany at university, before that I was in Slovenia University, Military Academy

I military academy, wow! Lots of experience

MI01 I worked also for an insurance company and software development in Switzerland

I so you’ve travelled quite a lot?

MI01 yeah, I always changing (laughs)

I so you’ve been teaching in the foundation year for the past 13 years

MI01 since 2002

I 2002, and was the module you were teaching or has it changed…

MI01 so, mainly what has been changed is students’ numbers, because I teach two maths modules, they are like A-Levels syllabus in Maths and A-Levels syllabus in maths did not change so the materials I used to teach did not change. But, basically all the time what is changing is when I started teaching in the foundation year there were 16 students. So, I had two postgraduate teaching assistant helping in one workshop, and now there are twelve postgraduates

I yeah, now’s about 130 students?

MI01 140 or 141

I you mentioned A-Levels maths…

MI01 A-Levels that’s basically the qualification that you get when you’re in college and so for our university depending on which course you go, but, than the mark *A* is required. Like the qualification is called A-Level, they say it’s advanced but it’s A-Level. *A* doesn't mean like mark but it’s what kind of qualification. For instance, to do Maths you need *A, A, A* like three A-Levels and you need the mark *A*

I so, basically the syllabus is something like A-Level?

MI01 yeah, should be at A-Level

I you have two maths isn’t it? Maths A and Maths B? So, which one …

MI01 they are both together A-Level. So, in the first one, yeah, basically student write two exams. Both are assessed through exam and the Maths A is basically the only exam that they have after Semester 1. So, we don't’ have (write 4.31.8?) pass mark for that exam. So, in away the pass mark for the Maths foundation year is 60% on Maths B and 55% over all, and partly this is because the foundation year students they are maybe not used to exam environment

I umm

MI01 they didn't sit for an exam for a long time. This is kind of practice to reduce the stress situation (laughs)

I okay. Now, talking about UK students who’ve already taken A-Levels.so, it’s not like a repetition?

MI01 no. if they have good Maths mark they don’t come to do foundation year they go straight to do degrees. So, this is for people who did not get A-Level or got the wrong A-Levels like they want to change they don’t have the A-Level they’re required for programme of their study, and sometimes, often there are overseas students that are different reasons for them because it’s often it’s difficult to translate their qualification into the qualification here. Sometimes they often missed or have lab experience and sometimes the students feel that they shouldn’t be in the foundation year, but when they come to the end of the programme when they looked back often they think the foundation year’s a very good experience for them, and I think overseas students then like also learnt this completely different environment. I think it would be much more difficult for them you know go straight to the first year here. Maybe academically is not very challenging but then, there’re so many challenges (laughs) other challenges, so I think often when I meet the students towards the end of their degree they also think foundation year was a good experience, one of my best year (laughs)

I so, based on your experience and observations because students come with different profile, learning background, different culture, they have language problems as well. So, they are diverse group, so based on your observations which group of students struggle with critical thinking skills, which you believe? And, what would be the contributing factors, do you think?

MI01 It’s kind of (…) so, no. I don’t explicitly test their critical thinking skills. So, you know in exams you need to think, and I think that there’re kind of differences (sighs). So no, often students, overseas students often think everything is too simple for them, you know.

I umm

MI01 *I have enough*, few of them don’t do any writing in the lectures because they feel, *oh! I know that.* And, for some students it’s kind of too difficult. I know, sometimes they afraid even everything is on the board what they need, they’ll like say *I don’t know*. *I don' know* *where to start and what to do*, because I do explain and then give small example and go a bit around, and often students waiting until I do it on the board. So, it’s kind of for me not easy to know where the problems is always. Sometimes they’re simply chatting and they don’t think enough or they don’t know what I said, but then I can’t say everyone is like that you know. So they are diverse as you said, sometimes they didn’t understand maybe, but I think often they don’t put enough effort, and then I don’t know. Maths is not a kind of subject that you go and on another day if you haven’t been you haven’t done anything. Whenever, you come you’ll be able to follow everything perfectly. So, it’s kind of building, so somehow we try to engage students work continuously enough, every day a bit through surprise test. But, I’m now just trying to evaluate it and it’s unclear if we succeeded to put them working more regularly through it

I umm, right. So, it’s actually difficult to identify…

MI01 yeah, you know I don’t have as you say, so what’s you background and then, so to teach them critical, I know I think Su can help you the most with it. I think she’s teaching critical…

I Routes to Success

MI01 ah! Routes to Success, so it’s part of Routes to Success

I right. In your opinion when we say, oh! This student has critical skills, good critical skills, what would be the criteria which you use to identify if the students have the skills?

MI01 often you can from the question they asked you

I the types of questions?

CT SS

MI01 you know, I teach, I give the lectures, and the majority of the students do not ask anything, and it’s not meant to ask you know when you have the lecture of 140 people. So, you don’t expect, so you know the students by themselves asking too many questions. But then, like the students always interact, so you know. Some you see when you go around what they do, sometimes you know they ask questions during the lectures, sometimes they come and ask question on the board after the lecture. So, I think from the interaction you kind of see where is the problem you know. I think there was a guy, I thought he really had great Maths skills like you know the kind of knowledge that he learnt everything in advance but how he would react when I would explain something and what kinds of questions he would ask. So, I was joking with him and then I would go to Maths, but no (laughs)

I right. So, interaction is very important?

MI01 yeah. Through interaction you can see, but then you know teaching this massive, so probably the postgraduate students could help you much better to answer this questions because you know they work with students in small groups they talk to them. You know in a big lectures I can’t see much about it

MATURITY

I umm, okay. So, how far do you agree that age contribute as well? Like you have mature students, you have students fresh from school, so the way they think is different, so do you think age is important as well? Maturity is important or is it not necessary?

MI01 I don’t know. Sorry, I think it’s more personality, you know, because some students are really very young and still like engaged and some are old and disengaged, and some are old and engaged, older I mean. So, I think it depend more on personality

I attitude?

MI01 yeah

I attitude and just now you mentioned effort?

MI01 yeah

I so, coming back to your lectures, so how do you run your lectures, like show them the formulas, because yours is Maths. You just show them and get them to do whatever work after the class sessions or during the class itself or do you allocate time for practice?

MI01 Basically, the lectures are divided into quite small units. I explain to them a notion and something and try to be plausible. So, I kind of, I say Maths is not religion. I don’t like to give them formulas and say this is what you remember. I some how would like the formula to talk to them and I try to make it plausible kind of so that they could understand, could make sense for them, and then they use it on some simple examples. So, the problem sheets, then represents it they’re given and do on workshops they present more kind of more complicated examples. So, in the lecture there’s not enough time to do a complicated example, so, they learn the concept on a simple example, and then they like reinforce what they learn and working on the problems in workshops

I right. So, how important is language for a student to understand a concept or …

MI01 I myself would say it’s different to subject to subject, and I think for Maths it is not that essential. I think the language of Maths is so simple that I don’t believe that there are many students who would not make good progress in Maths because of the lack of language. I don’t think that is the case

I because of the uniqueness of the subject itself?

MI01 yeah, it is. Because Maths itself is quite a simple language, even learning more advanced Maths would not be difficult with the language point of view

I right. You know there are some skills, I’m trying to, because yours is Maths, of course you need some of the challenging thinking skills to solve problems, so coming back to these thinking skills or critical skills what are the skills that you consciously make sure they get it that you implicitly or explicitly give them the opportunities to practise and what are the skills you think, oh! These are not necessary for them, therefore you exclude because students...

MI01 I think the most important is that they think. So, sometimes they ask me if I could make a list of how they can remember things, you know to help then to remember. First, I don’t know that kind of things, and secondly I don’t believe that is good because you know like you understand the concept then kind of you can derive, you know some how you can do back think and derive. But then, there is just kind of mnemonic that you try to remember and you forget that there is no route to go kind of to find to get out. So, I think it would be really thinking, simply thinking (laughs), and know how to write and to dare and not to be afraid. Also, sometimes it’s important to use proper notations and you know that kind of structure of what you write down to structure your thinking and you focusing and so on. But, often students like don’t follow, like you say, what I was recently was explaining vectors and I say how do you all know to do vectors. There are a few ways that I use all over, so there are a few ways and it’s not like one is important than the others but they are all used. But then students used in their own ways that is, so for instance you write (writes and shows on the board) like you use a letter and put a line down or put the arrow or put it on top or make it kind of bold or use two letters with a line up or arrow down, you know. But what you don’t do is just write a lower case without anything and just two letters without anything, and this what students do. In spite of telling them you know then later on you somehow you know when you do not develop this habit then, you know this is foundation. If you didn’t put a proper foundation somehow the structure will not be very stable. Oh! I will write it now and when come to exam I will write properly

I umm

MI01 and, also often students don’t write you know, skills to write

I umm

MI01 I mean you know when you write in exam for two hours, I mean you need to be able to think and write for two hours. I’m not sure how much students exercise that. You know, often they take a photo of the book. So, I don’t know the kinds of studies that tell me that students who are just taking photo are performing equally like those (laughs)

I who’re actually writing

MI01 yeah (laughs), but I do kind of believe that when you write that somehow you engage in different level with what you do. It’s kind of focus, think and write down properly, and these are…

I so just know you mentioned about vector, is it something to do with giving attention to details?

MI01 yeah, I don’t know. It’s so often you see that they write in a different way than the way you told them, in spite of the fact you know, for something there’s a matter but when you say this is how you do this and for this there isn’t a (shrug her shoulders)

I last questions, so how would you define critical skills?

MI01 for me critical thinking you mean?

I umm

MI01 so, for me critical thinking skill equal to thinking skill. I mean for me if you think then you think critically, I don’t know (laughs)

I yeah, like thinking in what way? Like in a creative way, there aesthetic involved as well…

MI01 then, I would say Mathematical thinking. So, you are given something you know you have to use that to produce something else. So you know, and often you know what you are given and you know what you want to get. So, now is that thinking process to connect that to find the way from one to the other, so this is you know kind of

I so, like for example you have a concept and then you have to come out with a product to…

MI01 yeah, this is kind of you know, first is to formulate, to have the statement you know, so what you need in order to work to get (laughs). But, when you have that you know, you somehow have to see how you know in a logical way go from one to the other

I uhm

MI01 so there are, there is skill when you have a problem, probably the foundation year student when going into engineering you have a problem that is maybe not in mathematical way stated, then you need to think how to understand the problem how to keep what is essential and how then to you know to translate that to kind of abstract setting, solve it and then come back and present the solution to the person who asked you a question in a way that the person understand and can do something with it

I okay. So, basically what you’re saying is you have to have a formulae or a statement and then, you have to logically think about it, and then…

MI01 yeah, Mathematician is proving a theorem, the theorem suppose that you have something some structure or some spaces or something with some properties you want to conclude them with something else, you can get from that (laughs). But, then foundation students are not that much exposed to that kind of … (laughs)

I right, okay. So, the process of connecting from what has been given to what you have to reach is critical thinking skill

MI01 yeah. Yeah.

I okay, thank you