Balliol College Mathematics, Dr Vicky Neale – Video transcript

The tutor, DR Vicky Neale, is seated, facing the camera. The tutor's name and course subject are shown the first time they appear. The tutor answers the questions that are displayed on screen.

>>DR VICKY NEALE (WHITEHEAD LECTURER IN MATHEMATICS AND SUPERNUMERARY FELLOW): I'm Vicky Neale. I'm the Whitehead Lecturer and a Supernumerary Fellow at Balliol. I teach Maths to undergraduates at Balliol.

[Question displayed on screen:]

What qualities do you seek to develop in your students?

>>DR VICKY NEALE: I really want my students to become independent mathematicians, I want them to develop those mathematical patterns of thought. They've already got some of those of course, from school and college and so-on but, looking for them to become independent across the course of their degree. There's a real transition from school to university, getting into new bits of maths or familiar bits of maths but from new perspectives, developing those patterns of thought and then progressively becoming more and more independent towards the end of the degree. Our students who are here for the fourth year for example, will do a dissertation which is a much more sustained piece of independent work. That curiosity is really important and kind of interesting, in not only what does the math say? But, why does that work? Can we understand why that is? Can we be sure that's true? Enjoying problem solving, because problem solving is a big part of what we do in maths, our students spend lots of time solving problems, lots of different styles of problem and they might be problems that are best solved with a pen and paper or problems that are best solved with a computer. They might be problems within maths, they might be problems applied to other areas but, problem solving and curiosity I think are really key.

[Question displayed on screen:]

What type of work do you give students to prepare for a tutorial?

>>DR VICKY NEALE: For Maths, the tutorials are part of the student experience, so our students are also for example, going to lectures in the department, that's a really big part of what they do. The syllabus is very much shaped by the Maths Institute and the Stats Department, they set out the material that needs to be addressed in the course and that's primarily introduced in lectures. Our students then work on problem sheets in between lectures and also working on their lecture notes and understanding what just happened in the lectures and all of that kind of thing. The problem sheets are what we discuss in tutorials and also in classes so, the students have several hours for each course between tutorials that they're working on a problem sheet, they'll hand in that work to one of us or to one of the

graduate students working with us who will mark that to give them some feedback and that will form the basis of the tutorial or class.

[Question displayed on screen:]

How are tutorials structured?

>>DR VICKY NEALE: We have this mix of classes and tutorials in the first year and I guess classes and tutorials have a slightly different flavour so maybe I'll think about those two things separately. Classes will have all of the students at Balliol taking that particular course so, that might be 10 or 12 students in some cases so inevitably, those are driven a little bit more by me as a tutor, I've looked at the students work, I've got a good idea of where they've had kind of challenges and so on but, I also want to make sure there's lots of space for students to ask questions and to chip in. It's definitely not a lecture, me just talking through solutions. I want to make it much more of questions they would like to and potentially bounce ideas off each other. We can also use those to recap some kind of key ideas so, I might have a little activity that I ask them to do as part of the class. Tutorials will typically have maybe two or three or four students, so a much smaller group and those are much more a discussion where the agenda if you like, can be shaped more by what the students have brought with them and I'm forever encouraging the students to come along with a list of what they'd like to talk about. Sometimes they've even talked as a tutorial group beforehand and realised; oh, well actually I had a problem on this question but I can help with this other bit, and they've sorted out some things amongst themselves, but then there are some key themes that they want to pick up on. It's not really about "how do I solve this question three?" I'm not really fussed about this question three, it's more about when I see a question a bit like question three in the future am I better equipped to do it? Is that building independence that I want to do?

[Question displayed on screen:]

How do students get feedback about how they're doing?

>>DR VICKY NEALE: Students get feedback in a variety of ways through the course. There's the kind of "summative" feedback in the jargon, which is the end of year exams, assessments, that kind of thing that's mostly exams for maths but, there's some project work at different points as well. There's also all of the formative feedback they get during the year, which is about helping them, see how they're progressing, identify areas to work on, see what they're doing really well, that kind of thing. I think one of the strengths of our system is that the feedback on the homework, if you like during the year, the problem sheets doesn't count towards the overall end-of-year kind of assessment. What that means is that I hope that the students feel they can be really honest in their work about what they do and don't understand and I can try to give them feedback in that spirit of, "How can it be better next time?" rather than just, "Where are you at right now?" I'm not very interested in where

they are in November in an absolute sense, it's much more about that kind of trajectory and journey through the year. So I, and the other tutors will be marking students work, not in a sense of giving a number or a grade even necessarily but kind of, comments to help students recognise what's great, what could be better, partly that's about maths content, it's also about how they're presenting their written mathematical ideas and how they're kind of structuring their arguments and the style of mathematical communication we're looking, for which for a lot of students is something they haven't had very much experience of before university. I feel like it's my job to support them with developing those skills, especially through the first year, so we can give them feedback.

[Question displayed on screen:]

What do you enjoy about conversations with students?

>>DR VICKY NEALE: I love tutorials and classes with students because I never know what's going to come next. I mean, I have some ideas I've taught this stuff before, I have a fairly good idea of which bits of the maths they might find more straightforward, more challenging, those kinds of things but, I love the variety of responses that they bring. For me, there's a really interesting kind of intellectual challenge in what can I best do to support these students in their development? My kind of, focus outside of my teaching is outreach, public engagement, maths education, So I'm always interested in how are students thinking about ideas, what can I do to support them? What is the smallest possible hint I can give you on this problem? So that you can still have all of that joy and satisfaction of solving the problem and all of the benefit that comes with finding the ideas for yourself but, I just need to give you that little nudge. So, really enjoy all of those things, and I also love seeing the students develop their own interests.

[Question displayed on screen:]

How do your students help or inform your own research and understanding of your subject?

>>DR VICKY NEALE: One of the things I find most satisfying about maths is finding a new way to look at something I already thought I understood or making connections between different bits of maths. That, for me, is where the most kind of richness and insight and frankly, joy comes from, is kind of making those connections. Having conversations with students can inform that because, they bring different perspectives, they notice connections between ideas or between courses that I might not have seen before so, even when it's material that I've taught lots there are always kind of things that I can do in terms of, thinking about how these ideas fit together, what can I say to help them? But also, opportunity to spend six, eight, ten weeks over the summer working on a research project with a Balliol maths tutor for example, or another maths colleague in the university and that gives them a taste of actual research, kind of, as opposed to problem sheets which can be really useful for

their career development but also that is making progress on research an interplay between what the undergraduates are doing and what we're doing as math tutors

[Question displayed on screen:]

What is the best thing about teaching at Balliol?

. >>DR VICKY NEALE: The best thing about teaching at Balliol has to be the students. We have a fantastic community of math students, there's quite a lot of them. We've got students studying maths and joint schools, Maths and Computer Science, Maths and Philosophy, Maths and Statistics. Also, our graduate students as well, so there's lots of them. They come with really different perspectives. They come from diverse backgrounds, all over the world, lots of different experiences prior to coming to Balliol, which all contribute to their experiences here and I love seeing them develop their interests as they go through their degrees in different bits of maths, whatever those may be, as well as developing in other ways outside of their mathematical studies there's BUMS , the Balliol Undergraduate Math Society which organise kind of social events and all sorts of things so, yeah, the students are fantastic.

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