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INTERVIEWER: Hello, and welcome back to The Student Hub Live Open Day. Well, our next session, our lunch break session, while you're all enjoying your food and talking about what you're eating at home, I'm going to interview Hazel Rymer, who is our Provost Chancellor of Learning and Teaching Innovation. And Hazel is also an active researcher, so I'm going to ask her about how all of her research is going, and what she's got in line for us in terms of learning and teaching innovation. And in fact, how that sort of matters to students, because a lot of the time, you're going to be studying in some of these online rooms, which we'll fill you in on later.

And in this virtual learning environment, which is very important. And Hazel oversees it. But Hazel, you also do other things, which I know you're very passionate about. And you love researching volcanoes. How is it all going?

HAZEL RYMER: Well, it's going very well, thank you. There are no volcanoes here in Milton Keynes sadly, but I think one of the great things about being a vulcanologist is you have to travel to go and do your work. You can do a certain amount from satellites, of course, but I'm a field vulcanologist, so I go out and feel the rocks and actually go and do the work.

INTERVIEWER: You've been away recently, haven't you?

HAZEL RYMER: Quite recently, yes. Yes. The most interesting trip I did earlier in the year was to Nicaragua, which is where I've been researching for about 20 something years. Gosh, really? And there's an active volcano there that I've been monitoring for all this time. And we set up instruments on it, make our measurements, come back again, and work on them for a year or so, and then go back again and make some more measurements.

And so we can see how the volcano evolves through time. And it's really, really, really exciting at the moment, because having had-- usually when I start monitoring a volcano, that is the signal for it to switch off. It does nothing after that. And actually, I have been there 20 years, but it's taken this long. Now, it's got a really active bubbling lava lake, and it is so exciting.

INTERVIEWER: Wow

HAZEL RYMER: It is really cool.

INTERVIEWER: So what are you looking at? Because a lot of the time, when you've been going over the years, you've had new innovations and technology, and new ways of measuring different things. What are you measuring, and what are you using to make those measurements right now?

HAZEL RYMER: Well, of course, it's not just me, it's lots of colleagues, et cetera. And basically, we all have a particular piece of kit or a particular piece of expertise. My thing is gravity, so I make measurements of gravity, the acceleration due to gravity, little g, which you think normally that's 9.8 metres per sec squared or whatever. But in the seventh, eighth decimal places, there are differences across the globe and through time. And so I monitor that on the volcanoes.

And what you can do is tell as gravity changes, in those seventh and eighth decimal places, you can tell what's going on underneath the ground. You can tell-- effectively, you're weighing the volcano in a way. It gets heavy as new stuff, new material, new magma comes up underneath it. And so we've been able to see the buildup of new magma underneath the crater.

And at other times, you see it going away, flowing away. And you can see where it's going to, because obviously, if you look at the surface, you can sometimes see the little hole, which would be the crater. But you can't see anything else. But with the geophysical techniques that we use, the geophys, you can see how things are moving around underneath the ground.

INTERVIEWER: So why is it so exciting right now? What are you hoping?

HAZEL RYMER: Well, actually it's so exciting, just because it's so cool to see magma bubbling away at the surface. It's kind of cool.

INTERVIEWER: --physical drama without the drama, don't you?

HAZEL RYMER: Well, it's just a volcano then, whatever. Bit of rain forest, bit of crater stuff. But when you've got the bubbling red hot stuff down there, that is really, really exciting. And some colleagues were experimenting with drones, which is great fun, particularly when it's other people's kit. They were flying them around, trying to take some measurements, collect the gases really, really close by. And there was a crash and burn, which was quite exciting. It made for some nice YouTube clips.

INTERVIEWER: Yeah, yeah, I bet, because I guess the thing with a lot of this, as exciting and exotic as it all is, a lot of it must be fairly methodical. You're going out there, doing certain things, being

meticulous, as all scientists are, so there's a lot of I guess un-drama, as well involved in things. So tell us about the process with the research, in terms of what you're doing when you're making all these measurements there, and then you've got to come back and write some stuff up, don't you, and do the boring bits. How do you deal with all of that?

HAZEL RYMER: Well, I think what determines whether you're going to be a scientist that sticks with this or somebody that just helps with the fieldwork part, I think is how excited you can be about the numbers. I mean, that's really it at the end of the day. So what I do is make these measurements around the volcano. So we have about 20 or 30 spots on the volcano that we go back to, and we put our instrument on precisely the same point each time. And that's not quite as straightforward as it sounds. But we do that make the measurements, and as you say, basically put them into spreadsheets, and then do the calculations.

And actually, for me what's really exciting is there's quite a lot you have to do with the numbers before you can then make any conclusions about what's going on. But once you've done that, it's just seeing it all falling into place. And then perhaps you draw it onto a contour map or something like that. There's lots of different ways of presenting the data.

But just suddenly seeing those patterns, and you think, gosh, look at that. I can now tell that this part of the volcano, for example, has inflated over time, not so much, as, you'd see it on the ground but the numbers tell you that this part has inflated or deflated or whatever it is, or the gravity has increased. And that must mean that you've got some new magma coming up. Just seeing that coming out of the numbers is really, really exciting. It does take all sorts. I do accept that.

But I think, a lot of people say to me, so what do you do? Being a scientist, what does it actually mean? And I say, well, 99% of the time, just like pretty much every other job, you're sitting in front of a computer doing stuff with numbers or words or whatever. But there is that other amount of time, in my particular case, where I get to go out and do the field work.

INTERVIEWER: But will these numbers ever predict then what's going to happen, or will they always remain unpredictable? Are you ever going to be able to go, run!

HAZEL RYMER: Well, it's not quite like the movies sadly. Well, we're very good at predicting with hindsight. Now, I know that sounds really awful. But the more we learn about particular volcanoes, we can begin to see patterns. And if we look at the patterns that the data show, and then we look

at what the volcano did at the same time as you got those patterns, then what you can do is when you next see that pattern, you can say, well, let's see, last time, that happened. Last time, we saw this trend in the data, that happened. And you can start to make that sort of inference.

And then what's really interesting and a bit more difficult is to say, OK, well, somebody else over here has made some measurements, and oh, it's gone up like that. And well, at my volcano, when that happened, when I saw that trend, then this particular activity happened. So you can start really value adding at that point, because otherwise, you've got to have all of those measurements done from scratch at each volcano, which is never, ever going to happen, because there are more volcanoes than you can possibly make those sorts of measurements at.

And it's always easier to, once you have a big, high profile eruption, resources get thrown in. People go and they're really excited to go and make measurements. There's not very many people, perhaps, it's foolish enough to stay monitoring a volcano for a couple of decades when basically not a lot is happening. You do have to spread your risk a bit and do several volcanoes obviously.

INTERVIEWER: Yes, no, absolutely, but you have a cunning plan, because we have a lot of things here where we get students to do some measurements. So whilst you're off doing exciting things, our students studying science with us might get the opportunity to use a digital microscope or take measurements. And the beauty of all of this is that, of course, you're combining a lot of data together with various students going and doing the counting for you. I mean, what a brilliant plan.

HAZEL RYMER: It is quite a cunning plan, that, isn't it? Yes, in fact, I've had students come out in the field with me as well and use it as part of their final year project as well. So there are opportunities like that as well. So we've got all sorts of different projects, where either with us scientists out in the field, or sometimes just the equipment remotely there-- and in some cases, the equipment is here on campus, and you'll see a little bit more about that later on-- students can either manipulate data that somebody else has collected, or really excitingly generate their own data, put it into these really exciting spreadsheets and things, and come up with their own conclusions, and really get something at the buzz of being a real scientist.

So there are lots and lots of opportunities. It's quite surprising actually, because you would

think that studying with the Open University, how are you ever going to get into the lab or into the field or whatever? There are opportunities. But just as with all sciences these days, a huge amount of it is done through a computer screen anyway. So if you were working at an observatory, looking at galaxies or whatever it happens to be, you possibly would be at the observatory, but you would be working through a computer interface. Actually, it doesn't really make much difference whether you're physically at the observatory, here in Milton Keynes, or in your home. Doesn't actually make a difference. You're still interfacing the equipment through your computer.

INTERVIEWER: So you still have the same sorts of employability aspects and exposure to these things. And of course, I guess one of the things that the Open University with the Open STEM labs do, is they possibly have better ways of doing distance education in science, because they need to in that sense, so students do get that experience.

But tell us, because you're Provost Chancellor of Learning and Teaching Innovation, and whilst all of us innovation is great for science, and you're clearly passionate about science, all of our students will in some sense interact with us online, remotely, et cetera. So on the learning and teaching innovation side, we're going to talk a little bit later about these online rooms, the online tutorial systems, for OU Live.

But what are the sort of big things you are working on? The vice chancellor mentioned we're being more you know digital, and these sorts of things are really on the increase. And for somebody like me, who still can't work my iPhone, I think, oh, you know-- but he was saying actually it's about streamlining it, so that you're less aware of some of these processes, and it's easier actually to access it. What are the things coming up, and what do all our students need to know about your remit, really?

HAZEL RYMER: Well, what students need to feel confident about right now is that their modules are going to work. So it's going to be a fantastic learning experience with us, I hope. I would say we're something on the cusp at the moment, because way back when, Open University course materials were principally designed for print. And we developed them to basically be posted out to students. Students would read the books, interact with books in whatever ways, and fill in their assignments and so on, and post them back to us.

Now, obviously we've been moving with the times, and more and more of our study materials and delivering of assignments and so on is done electronically. What the phrase digital by

design means is not digitising after the event, which is in a way, arguably the way that we've been up until now, not across the board, but in many cases. This is about actually designing the student experience from scratch to work in a digital environment.

So for example, on your mobile phone, isn't it annoying when you go to those websites that aren't suitable for phone? It looks all right on a tablet maybe or on a big screen computer, but it looks absolutely dreadful on your phone. There's no excuse for that. We can make it so that your learning experience is the same, and is equally good, and it renders perfectly and so on. And so interactive screens and so on actually work on a phone, because so many don't.

Well, with the OU, what we're working towards is a system whereby it doesn't matter what sort of size screen and what sort of computer it's attached to, it will be a great learning experience. So that's what we're working on. And it's going to take a number of years for all modules to be produced in that way, but that's the future.

Right now, we have sort of a combination really of ways that our materials are presented. Many of them have an online version, but they're not digital by design quite often. They are sort of an online version of what would be printed. And in some cases, students have the printed version as well.

And it's quite a different way of learning, if you think about it. A book is a kind of a linear feature. I know you can flick to and fro, of course, but it's largely, you're in receive mode. You look at something, and you read it, and maybe do some exercises and so on. But with an online environment, you have an opportunity for instant feedback. You have an opportunity to ask questions, you have an opportunity to do quizzes and things, and to learn in the way that you want to learn. And so if you need, for example, to have a little 10 second video just to explain something, you can click on that and see that.

In the printed way of doing things, the best we can do really is say, now go to your CD-ROM or whatever, and go and have a look at that, or go to YouTube and look at something. But it's somewhere different. It's a bit awkward. If it's all in the one device to your comfort-- so if you're travelling and you're looking on a phone, fine. If you're at home studying on a computer, also fine.

INTERVIEWER: Brilliant. Well, Hazel, you've certainly got your work cut out, don't you, all of that. Thank you very much for filling us in on that whole experience that students can look forward to, what they've got now, and also your research. Thank you.

HAZEL RYMER: Thank you.

INTERVIEWER: Right, well, our next session, we're going to cover how the career service can help you. So if you're a student who's already registered with us, you're going to find this really interesting. But before we do that, we're going to have a quick video where Dan and I go to the Briggs Building. See you in a minute.

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