Respondent 13 Interview

Mon, 3/15 12:34PM • 37:08

**SUMMARY KEYWORDS**

plants, students, important, ornamental horticulture, question, people, structure, science, practical, basic, firstly, knowledge, modules, absorb, heavy metals, lecturer, applied, concepts, problem, function

**SPEAKERS**

Respondent 13, Megan Roberts

**Megan Roberts 00:01**

Wonderful. Okay, I'm recording. So, my first question to you is, is plant blindness or a lack of interest in plants problem in your institution? Well,

**Respondent 13 00:19**

I'm an ornamental horticulture. So, most of the people that working closely with me, they actually just loved plants. But I think in general, people are not interested in plants. I think because there are more in animals or in chemistry or something like that. I don't think I think in my department with ornamental horticulture, it's not a problem, because we are actually focusing on plants. But I think in general, it can be a problem that people don't think, think of plants are as important.

**Megan Roberts 01:00**

Do You have a reason as to why that could potentially be?

**Respondent 13 01:06**

Um, why aren't they because? Well, I don't think plants, they don't think plants are interesting. Maybe they do have a little bit too little knowledge about plants and don't really know the exciting stuff about plants. I think that's the problem. Yeah. Maybe because they also used to plants on an everyday basis. They don't even see the plants on a daily basis anymore.

**Megan Roberts 01:36**

Yeah, I think that's very possible. In terms of your degrees, do you have issues getting students to enroll for plant science degrees? And plants modules?

**Respondent 13 01:52**

You know, we actually had a decline in our number of students that actually did register for or applied for ornamental horticulture. But I must say this year we actually had; it actually tripled our students the numbers that actually apply to be able to do ornamental horticulture. So that was to us a quite surprising we did last year 2018 2017, we actually went out of our way to actually advertise and promote ornamental horticulture. We went to specific, we had big displays, with our science days, open day. And we actually went to the Walter Sisulu Botanical Gardens with this job, occupation, you know, workshops and displays for schoolchildren, and things like that. So, we did really try and promote ornamental horticulture students. And we don't know if that really, actually, we actually went on road shows as well. And maybe that we just make children aware of our course of ornamental horticulture. Maybe it opened their eyes to plants and how interesting plants are

**Megan Roberts 03:20**

that's really good that you guys have such an increase in number.

**Respondent 13 03:26**

Yeah no, because it was wonderful.

**Megan Roberts 03:32**

I can imagine that's really wonderful. He is.

**Respondent 13 03:35**

Yup.

**Megan Roberts 03:37**

Okay, my next question, do you think that a first-year plant science module should have a narrow approach covering a few concepts in detail or a broad approach touching on multiple concepts within the field?

**Respondent 13 03:57**

Well, okay, there I think it is very important. That, okay, you should actually have a broad perspective, but you must actually be very selective at which aspect you're actually going to teach students on a first-year level because there is the basic foundation you know, for the rest of their studies. So, it should be very good. And you should actually identify those components that need to be taught. You know, that those are the basic relevant components that you should actually teach. A broad approach should actually comply or contain you know, nearly all the basics of plants. Okay, firstly, the structure the morphology of plants. The different structure of plants, the different systems in the plants and then you can actually in second and third, you can actually build up on these basic foundation structures that you've actually given the students. I found. Okay, when I first started that UP, we did do this, okay, we had a broad spectrum of that we actually gave all the students a very firm knowledge of all these basic structures that was necessary to actually look at when I left there, we actually just, I think it because it was a year module first. So, you could actually give attention to all the basic functional concepts it wasn’t watered down, the students didn't really have a very good knowledge of plants.

**Megan Roberts 06:09**

Okay, do you think that using broad approach could potentially help increase interest in students?

**Respondent 13 06:21**

Um, maybe it can, because then you actually cover but in detail, you cover all the different aspects, it actually makes plants interesting. You know, so if a student is maybe more interested in the physiology of plants, to actually give them that necessary, if they want to go further in the physiology of plant, if it's the medicinal value of the plant, and you give them a good concept of the medicinal value of plants, they can go further in medicinal value, if it’s in the ecology of plants, they'll be able to go into the ecology of plants, but I don't think at first your level, they should give such a lot of attention to ecology in detail. Maybe I think it's more adaptations of plants to different environmental factors. So, they can apply those structural adaptations of plants and see how it actually fits into the ecology at the latest stage.

**Megan Roberts 07:23**

Okay, thank you. Sorry, I live by Waterkloof Airbase so the planes are busy sometimes.

**Respondent 13 07:32**

Sorry, maybe I'm talking too much.

**Megan Roberts 07:36**

Sorry, that just excuse the plane that's flying over my house. Okay, my next question. Do you have the interview guide on open in front of you at the moment that I sent?

**Respondent 13 07:53**

I do have it with me. Yep.

**Megan Roberts 07:55**

Okay, so then my next question is Question four. Which of the following threshold concepts Do you think should be taught in a first-year plant science module? evolution, optimizing transformations, energy and meta information flow exchange and storage, structure and function systems.

**Respondent 13 08:19**

Evolution, I think so because that can change, okay, because something people think that the monocotyledons are more advanced than the dicotyledons and things like that, so we can have some aspects of evolution. Okay, that can always change as new information is getting available. But I think it's very important to have the pathways and transformation of energy, the basic system, physiological systems that very important, again, structures and functions that is also of utmost importance, I think. Because if you don't know if you see this structure and you don't know what the function is of this and why this specific structure of the plant in this manner or why it is there then I think it's actually very important. So that to me is the basics of why it is there it is very important and the pathways and energy flow and how a plant actually operates. Yeah.

**Megan Roberts 09:29**

If you had to pick your top two, what would that be?

**Respondent 13 09:35**

structure and function and pathways and transformations of energy and matter.

**Megan Roberts 09:41**

Okay, can you give, explain that a little bit.

**Respondent 13 09:46**

Um, okay. So, if you don't understand, okay, why a plant says specifically in the leaf, okay. You don't know why. If you looking at the anatomy of a plant leaf. And you don't know why you're looking at the structure and you don't understand why if you look at the cross section of the leaf, why the palisade mesophyll cells are at the top and why they are looking. The way they are looking, they are elongated are closely packed next to each other, they contain a lot of chloroplasts. Okay, and we will look at the spongy mesophyll cells at the bottom because they look like they've got big intercellular airspaces and things like that. If you don't know why this leave looks like it is because it's actually the palisade mesophyll cells are closer to the sun. So, they need to absorb a lot of sunlight to actually have a better photosynthesis to produce the food in the plants. So, I think that is to me very important to know why this leaf actually is. Looks Okay, and then because then you can actually understand better. So that's why I'd take for instance roots, why are specific routes like? Like Take, for instance contractile roots? Why do they look? And why do they form and function in the manner that they do? So that's what I think that the structure of plant organs is very important. Because that will actually make you understand concepts better in the long run.

**Megan Roberts 11:37**

Okay, and is there one that you think we should not put into a first-year plant science module? Hmm.

**Respondent 13 11:50**

No, I think all of them are important, because all of them actually are interconnected. Maybe evolution, evolution because that to me is a little bit higher stage. And that actually is coming more to the taxonomy to plant structures. The taxonomy of plants and yeah, and I think the taxonomy and ecologies are a little bit of a higher level. That's what I think.

**Megan Roberts 12:25**

Okay, thank you. My next question is in question five. So, which of the following threshold competencies do you think are important to be taught in a first-year plant science module? The process of science, the interdisciplinary nature of science, integration of science, with society, communication, collaboration, being able to understand and interpret data and quantitative competency?

**Respondent 13 12:51**

Okay, which one do you think I think is the most? Okay. Well, the process is of science is to me important. Okay. And because I think it's important, the interdisciplinary nature of science is also to me important because I think we're actually moving away from just focusing on one aspect, and I think that we should actually, the different disciplinaries in science should actually work together to give us a better understanding of nature and plants in general. Okay, I can just tell you why I'm saying this because I was part of a project, actually, of the University of Durham, in England, and they actually looked at different plants and how plants would actually say like, capture water, okay, and actually looked at all different plant leaves and see like to see from which water actually ran off the best. And these concepts and this studies that they've done, and actually, one of this Cypress, what conifer species okay it falls in the conifer, more or less family. And then they actually used this information that they actually obtained from the plant leaves to develop roof tiles, to actually let water run off so the water can be harvested. Now, I think we should actually, you know, different, different and disciplinary should work together. And a lot of times I think we actually isolate us and just think, okay, because I’m plant science I'm just going to concentrate on plants, but actually, these are A whole vast area that actually open to us if we just start working together. Okay, and, of course, that connects to the integration of science into society. Because a lot of times, I also think that a lot of people that are doing science or horticulture or something just as a hobby, they actually also have a lot of knowledge. And we can actually incorporate society, we can actually obtain information from them, but they can also learn from us. So, I think it should be a two-way pathway. And of course, communication. Very important. Working together very important. And okay, now, I think understanding and interpretation of data is a higher cognitive function, as well as the quantitative data. What I found is that a lot of people always okay, because they want to do the studies quickly, they actually concentrate on obtaining qualitative data and not really on quantitative data. Yeah, and, but both of them have a place in society.

**Megan Roberts 16:23**

Okay, thank you. Um, if you had to pick a top two of those that you think would be most important to focus on the first-year level? Which do you think this would be?

**Respondent 13 16:34**

I think we should look at the interdisciplinary nature of science. Yes, and okay. But then the collaboration of between different aspects of science.

**Megan Roberts 16:55**

Okay, and what do you think is then could be left out on a first-year level?

**Respondent 13 17:11**

I don't think one. I think all of it too, because we should look at science as a whole. We can't really leave out anything. And we should teach them? Maybe a little bit over... No, I don't think we can actually be there at one.

**Megan Roberts 17:31**

Okay, thank you. Then my next question. Okay, have you ever heard about vision and change? Well,

**Respondent 13 17:45**

I didn't, I didn't know it was a specific aspect. Because on a daily basis, we actually hear about changing your vision and change that we actually need. So, I didn't know that it was one specific or specific aspect or, but yep.

**Megan Roberts 18:08**

Okay, so then, my next question, what do you think barriers to changing a first your curriculum will be?

**Respondent 13 18:24**

Um, I think it's. Personally, I think a lot of times, it's actually a personal thing, that people are reluctant to change. And I think, because they've been doing things for many years, they don't really want to change. Okay, I also don't think a lot of times people change things just because for the sake of change, but I don't think they must really think about what do they want the outcomes to be? What do they want to accomplish with this change? And is this going to this change really going to be beneficial for all the parties involved?

**Megan Roberts 19:24**

Okay, do you have any suggestions as to how we might overcome these barriers, these challenges?

**Respondent 13 19:36**

Um, well, we've actually had to develop and we actually developed our whole curriculum. And okay, but we are more Applied Sciences in an ornamental horticulture so I'm talking, but I think it's actually necessary. Firstly, on your first-year level, I think that Students need to have a very good basic foundation of the knowledge of plants. And I think to me that is very important, but they must also be able to acknowledge of plants is what's the function of it, firstly, for the plants, but how this basic knowledge can be applied, say, for instance, in the industry. And why it is important to be able to apply this knowledge in the industry, because I've just been spoken to about the extraction of heavy metals from minerals from acid mine water. And we were actually looking, she was actually looking at which plants can be applied and are the most successful in actually absorbing, um, heavy metals, okay, from water, polluted water. So, then we actually wanted to go and have a look at the anatomy of plants to determine which plans will be able to actually absorb these heavy metals from a polluted water the best, so then we actually had to have that basic knowledge. And we actually came across that most of in practice, most plants that are being used to actually absorb these heavy metals or the monocotyledons, like your grasses and your Thai fats and things like that. So why? So, we don't understand quite right, why it is being applied like that. And we need to go and do research on this. So yep, so now I've completely lost my line by telling you all these different stories,

**Megan Roberts 22:05**

Very, very interesting stories. So, we were talking about the overcoming the barriers to change.

**Respondent 13 22:17**

Oh, yeah. So that's what I'm still telling you. I think that students do need to have a very good basic knowledge. But now I'm okay, that's just about my experience. But I think that if the lecturer can actually make a connection, as I told you now, between basic knowledge and application of this knowledge, just to get the students to think and make it more interesting, because maybe they're not interested in plants at all. But now, it's a problem, a daily problem that we encounter every day. Everybody's got gray water, everybody's got polluted water. So now, but give me solutions, how I can actually solve these environmental questions. So yeah. So, I think we need to be proactive, and actually just get our students to be enticed of this is the problem, how can I solve what can I use to solve this problem? Why is this way of doing it? And yeah,

**Megan Roberts 23:31**

thank you. Okay, then my next question is, what kind of resistance Do you foresee would lecturers have if a change was being introduced?

**Respondent 13 23:45**

Okay, as I told you, I think that people have been doing stuff for me years in this manner. And, um, but now, how can we help them to change? Oops, that is difficult. Yep, I don't, you probably need to change the state of mind. Okay. And actually, to make them realize that, okay, firstly, aka we had to change our state of mind because our student numbers were actually wrong in such a manner that we actually had to firstly we had to change our curriculum and make it more acceptable for firstly, for the green industry. That's why we actually went to the green industry and asked them, what do you need our students do know and what you expect our students to know. So, we actually went to go and get some information from industry, asking around and asking again. You know, firstly, what did they need from their workers, the people that actually works in the green industry. So maybe people should go out and contact people that's relevant in this specific field. I also think we should actually try and make, not just do research because of research, but it must be, the research must be up to environmental questions and things that we need to answer. So, yeah, I think, though, it's a change of mind and mindset.

**Megan Roberts 25:43**

Do you maybe have an idea of what could potentially be a good selling angle for us to motivate people to be willing to be part of that change?

**Respondent 13 25:57**

Okay, if you firstly go to the industry, and you can actually ask them, firstly, what do you need? And you'll be quite surprised that they'll give you some good info. Of what do they think you actually need to incorporate in your, in your course. Yeah, because I think a lot of times it should be applicable to what is needed.

**Megan Roberts 26:33**

Okay, and then my next question is, how important do you think hands on practical sessions are for first year plant science course?

**Respondent 13 26:45**

I want to tell you, I think, to me, that is probably the most important aspect, because only in practical will the students where they really need to actually see and encounter really how it looks that’s where they actually, okay, from if I just look at say of the plant structures, because you can see it in books, but things like that, and, but it's not always that clear in books like, if you need, you need to know how to work specific equipment, okay, how you need to, because you need to physically make hand sections to know how it works, because you think it's very easy. But firstly, when you start doing it, you know, actually, but it's difficult. You need to know how to use a microscope. You need to know how to work out concentrations and things like that. So, I think that practically, that is actually the very basics because that actually doesn't teach you. You can teach the students book knowledge, but I think you physically you need to be able to do it. And that's where you actually learn the most from experience on how to do stuff.

**Megan Roberts 28:10**

Okay, do you have? Yeah, so you've been talking about microscope skills and the looking at the structures of plants? Are those practical’s that you think we could potentially run in a first-year course?

**Respondent 13 28:29**

Yes.

**Megan Roberts 28:31**

Do you have any other suggestions that we could potentially run? Um,

**Respondent 13 28:38**

You know, okay, like, I'm just going to talk to you, because we are actually doing practicals with our students, although we open distance learning University, we still get our students into do some practical here. Because, like a lot of our students, just like a simple thing like pruning, the correct manner of pruning stuff, you know, like trees. If you're want them to actually, you know, you need to prune them in the correct manner to actually bare more fruit. But you actually need to teach the students how to prune this tree correctly, so that it can actually be more fruit. And if you want to prefer to prune the rosebush, how much you should actually take off from the rosebush to enhanced flowering of it. So that’s just from our perspective, but I think that, you know, you can show the student in the book, okay, even with a video but I think when I practice it, that's when it's, you know, and okay, I can just give you an example because I When I still was at UP, I was also part of the first-year practicals. And what I found we actually put out the practical material for them. But then one student came in one day. And she said, yeah, we should just sign a book? Because she's done a practical because she googled all her stuff. And then I said, okay, now let me quickly, I'll sign off yours, but now let me quickly just ask you some questions about what you've done already. And the one thing was, we actually gave them Hypoxis. And then I asked her Now, if this is Hypoxis, what is Hypoxis, you know, like, because you need to look at the root stock of that so but then she googled them, but she didn't still didn't have any knowledge. But when I took a physically to the I Hypoxis, rootstock, and I showed her the contract our route and how it functions, you know, then a whole new world opened for her. So, I think that physically seeing things and experiencing things, I think that's the most important thing.

**Megan Roberts 31:20**

It really does open up a whole new world.

**Respondent 13 31:26**

It does open up a whole new world, because I've presented yesterday, I've presented an Okay, that’s probably why I'm so plant anatomy today, I presented the plant anatomy practical to the students. And for a lot of times, it was the first time that they first did any plant anatomy sections colour them, and look at them under the microscope and, you know, like it was a three-hour practical. And at the end, they said, but can we just a little bit more a little bit more, because they it was to them, it opened a new world to them, because it was the first time that they really saw xylem and phloem. And, you know, and then for them to actually grasp the thing that this is 1000s of liters of water is actually absorbed through these eeny weeny little tubes in the plant. It was to them just mind boggling. And, and students enjoy that.

**Megan Roberts 32:27**

I know I enjoyed that as a student. Okay, that's all that I have from my side. In terms of questions. Do you have any questions for me or anything that you'd like to add?

**Respondent 13 32:42**

Are you going to change the course?

**Megan Roberts 32:45**

Yes, we are in the process of changing the course. Because, Megan, what

**Respondent 13 32:50**

I think is because I know that the first six months with you had MLB Yes. Okay. And then you had the last six months with that when they actually specialized in the botany section or the plant science section. Yes, but I think it was too short period for such a vast amount of knowledge to be actually present into to the students. I think just if I think of the really the plant taxonomy section that they did in this in the second semester, I think it was too little time for too much information.

**Megan Roberts 33:37**

Okay, yeah, we are in the process of changing the course. So

**Respondent 13 33:44**

Interesting, because we actually need to, we also are looking at changing our courses as well. All our semester modules to make actually, again, year modules.

**Megan Roberts 33:57**

That's a lot of work.

**Respondent 13 33:59**

That's a lot of work. Yeah. So, we busy in actually in wanting to change all our modules back into your modules. Yeah. Especially with this year of covid time. In our luck, it was because our half year semesters, modules actually stopped. Right in the lockdown five.

**Megan Roberts 34:20**

Yeah. Yeah. No. COVID has made it very difficult for a lot of modules. Yeah, definitely. Yeah. Even if up a lot of the practical modules like chemistry and process, your current science module, we weren't able to have any of our products.

**Respondent 13 34:41**

Yeah. And I think that's what the students need is that hands on experience of how to do things. Even when you deal with titration or chromatic Rafi. You need that experience to see what's happening. Yes, because you can get it from Google. But really, if you don't know how to spot So on that tarp flight, you don't know you're not going to know how to do it. Because you might do it too much. You might do too little. You need that experience.

**Megan Roberts 35:11**

No, I agree. It's, it's very important.

**Respondent 13 35:16**

Because we catching up now practicals

**Megan Roberts 35:20**

I'm not sure what we're doing. We ran all of our practice online as well.

**Respondent 13 35:28**

It's quite interesting because one of my fellow lecturers, but he's also one of my friends is a lecturer at the Northwest University urography an easy job because it's a problem, because they're doing now the practicals. But he doesn't know if the students really have the skills now because they actually looking at this stereo microscope at aerial photographs. That's the students really know, if he's looking at it rightly know, what is it?

**Megan Roberts 36:11**

Yes, we had a similar issue. You know, as well as we try to do everything, we weren't sure if they were really understanding. You know, like they say that understand, do they really understand?

**Respondent 13 36:24**

Do they do they really understand and do they really know what they're looking at? Yeah,

**Megan Roberts 36:29**

yeah. Yeah. Because typically difficult year in terms of practicals

**Respondent 13 36:34**

Yeah, no, definitely. But let that just show you how important the practical aspects are. Because it's things that people are students can't learn from books. They need to physically experience it.

**Megan Roberts 36:49**

Yeah. 100%. Okay, thank you for your time. I really appreciate it.

**Respondent 13 36:58**

And I wishing you very well with your studies and you'll get interesting results was

**Megan Roberts 37:06**

Thank you.