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Speaker 1: So, yeah, the meeting is being recorded. Yeah. Could you please introduce yourself briefly?

00:00:11

Speaker 2: Yes. So my name is x and I work at the centre of learning. And I work at xx and my position is split into two two roles. So first of all, I do a teacher university teaching qualification a supervision. But the other role is 50 per cent doing research on interdisciplinary education at the UT. And that's the one, I think is why we have the talk today. And basically, what I've been doing there is looking into modules, assessing them or not assessing, let's say, let's say, describing them and then coming up with ways to possibly help them with things that they're struggling with. So currently in our second iteration of applying things that we've created for to help them.

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Speaker 1: So yeah, that's nice. That's very interesting. I think that makes it a very suitable, ah yeah, population for me to have this interview with. That's great. So the first question is my research is all about higher order thinking skills and interdisciplinary research gone. What is your perception about higher order thinking skills? How would you define it in SA?

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Speaker 2: Is this in? Is this in research or is this in projects or group work or

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Speaker 1: as a teacher, as you tend to supervise maybe UTQ, but that is a much more higher level. If you have in your research as well, you could, yeah, define it from interdisciplinary context. What do you mean in in research? Interdisciplinary in interdisciplinary research context, high order thinking skills mean If you also have different definitions for project work, you could, yeah, explain that.

00:02:00

Speaker 2: Yeah, I think, yeah, the higher order thinking skills for me, if I just think of students and project groups, because that's what I'm focusing on is, yeah, basically teaching them to dissect the problem, to be able to order things and to be able to put things in. Yeah, to organize information first where they started. And then basically, you can move on to approaching. The problem was another one we can say. You know, like assessing if the if what what the problem is actually the problem, so there's a whole lot of different different levels. And again, you have to understand that when you when you start with students or researchers, whatever, everybody has their own starting point. So that's important to to have. You're beginning, developing and mastering level so you know where to start. But yeah, basically being able to approach a problem and dissect it and criticize it or evaluate it or look at the look at the. Can I say, I'm sorry, I haven't really formulated it properly?

00:03:16

Speaker 1: Hello. I that is my job trying to extract whatever that you have in your idea, in your mind about the kids. So you mentioned mostly about problems and we asked you about higher order thinking skills. You said the ability to dissect, organize, approach a problem in a structured way and criticize it and evaluate it. So for you, I wrote it, thinking

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skills is all about problem solving, regardless of problem. Can students demonstrate that ability?

00:03:49

Speaker 2: Yeah. Yeah, because in my context, the problems are different for each project, each module. So yeah, definitely from that perspective. You know, every, every, even every module they come up with with a new project, especially now with the challenge based learning, and they have to be able to, first of all, define what is the problem. Is the problem actually the problem? You know, sometimes if you have your stakeholder, they'll come with a problem and then the students realize, hang on, this is not actually the issue. The issue is actually something else. And this is this is maybe the path to to approach it rather.

00:04:25

Speaker 1: If I just probe you little further, in order for a student to dissect, organize, approach the problem and criticisms and evaluated what the thinking abilities one need acquired are a set of procedures one need in order to successfully do such things.

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Speaker 2: Yeah, that's what I'm also trying to look into. So this is what many workshops are trying to do in this, what I'm trying to create. But I think the first step for organizing organ organizing information, make sure everything's coherent, make sure everything's organized is, I suppose, the very first basic step is project management, I would say, because OK, guys in the group, because this is from group perspective, what are we working with here? How is this going to how are we going to? How are we going to do this? And then from there, once they know with how they're going to own it, how, you know, like the organization part, then maybe they can start to focus in on the problem and and ask you, maybe there's some questions they could ask. I don't know what those Questions would be, but I guess it would be the the very basic who, where, why, how I would start with it. But I'm still trying to figure out how we can, how we can facilitate them, that they can approach these things because I'm not an expert on on, on coaching or, you know, teaching students to think to do the high order skills, but. Great. I'm still working on that as well.

00:05:56

Speaker 1: Thank you. I think that gives a bit of an idea for me. So my second question, for example, how would you when a students demonstrated an ability to approach or handle a problem in a way that you think is kind of appropriate at the expected level? Mm-Hmm. How to identify this What kind of markers would you look at in students behaviors or in their actions?

00:06:23

Speaker 2: Yeah, I think what you'd have to do is create a comprehensive rubric. I would say it would be the starting point. And then you break up using, let's say, critical thinking, so defines the problem correctly. You know, beginning, developing, mastering what other parts would be integrates the the various or multiple disciplines into the possible solution goes back and, you know, restricts how that you so you have your different criteria that you're looking at and you make sure you define those first of all and then you define what a beginner will look like, what a developing person will look like and what a mastering level would look like. So yeah, I think the best way to do it is a very descriptive rubric for that and

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also that the students also have access to that. So they also know how to look for themselves. What do I need to do to get to that that point, to get to the mastery point?

00:07:20

Speaker 1: I can certainly see the mastery of UTQ supervisor creating comprehensive rubrics for identifying areas. So if I go a little bit detail into the rubrics, especially these these abilities, right? The problem dissecting or evaluating or criticizing a problem is much more not perceptible to the senses easily. It is kind of demonstrated through certain actions. So in rubrics, even higher order, let's say, in terms of the gradation you, you formulate the highest expectation in the rubrics criteria. What kind of things are behaviors you tend to think about when you think about such rubrics at the highest level?

00:08:11

Speaker 2: I guess that the students will be able to argue they'll be able to review check validity, validity of their of of the other, whatever, whatever's, maybe even their own suggestions or maybe the stakeholders perception of the problem. Yeah, I look at merits, look at disadvantages, maybe take into account what what might happen in the future or the context, you know, how does you know, just for example, you know, you know, if the pandemic hits and things shutdown, how how would it work? Then how would you know where climate change? Maybe just also take a step out and also say how the bigger picture? I don't know. I'm just making up stuff here. Again, this is something that has to be really carefully formulated. Think about and also context, according to perhaps each particular project that they do. So.

00:09:09

Speaker 1: And the beautiful thing is that actually, even when you said you are making up and it is not that, I mean, it comes from your expertise and experience and based on the interview that I've had, I think it is more or less coherent. OK. I don't think I had something. Yeah, you are making up. It's just,

00:09:26

Speaker 2: yeah, but maybe, maybe that's it might not be the right answer. If a lot of people are giving these answers, it may not be correct. It just maybe that somehow we've picked this up through this, you know, this unconscious message throughout. And then we're like, OK, this is what it is. And then it turns out not to be. But yeah, she does indeed.

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Speaker 1: So from the kind of expectations at the highest level, what I can see is argue the ability to check validity stakeholders perceptions, understanding, or understanding strength, weaknesses and potential consequences. And to be able to see the the the larger and the smaller picture of how it works in the larger system, etc., etc.. Yeah. So yeah, it pretty much shows what an engineers should be in the future. That's great. So that actually kind of gives me an overall picture as to what you perceive as higher order thinking skills and how would you expect that your students to develop as well? That's great.

00:10:27

Speaker 2: Yeah. But to develop, I don't know, because sometimes teachers say we'll do this project and students will learn this, and they just expect that magically through the experience, they're going to come out the end with these skills. And that doesn't happen.

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The skills need some some students already have it or they're, you know, they're able to do this by themselves because that that way inclined. But you can't just assume, yeah, that that just will magically happen.

00:10:50
Speaker 1: So she and I agree 100 percent with you because that has been my experience so far, also with my teaching faculty. As I teach in,ATLAS some of the centre believe that it tends to develop naturally. You don't need to do.

00:11:03
Speaker 2: Yeah. And the thing is as well, you know, about constructive alignment, I'm not going to assume, you know, all of those things. OK, so you do know constructive alignment. So, yeah, so you know, you have the objective and then you don't put any way or form any kind of tasks or, you know, way to support this learning. And then you also try to assess it. It's not fair. So you need to you really need to have your alignment of that objective, the task and the assessment properly. Otherwise, you shouldn't have that as an objective. So.

00:11:33
Speaker 1: Totally, totally agree. And I am. I'm also very big fan of this, and I really like biggs, constructive alignment. And it's just

00:11:43
Speaker 2: it's accountability, isn't it? It's not just making wild claims. This is what's going to happen. No. OK. Show me how you intend to do that and make it clear. And how are you going to assess that? And what does that look like? Yeah. Sorry, indeed.

00:11:56
Speaker 1: So indeed, it's a structured way of teaching. Rather than saying intuitively, I know how to teach. I do that magically. That's that's very right. Nice. So now that I, I would like to now, understand from your perspective, based on your experiences, what are the difficulties faced by the students when developing such skills? Obviously, in a class of students, maybe 50 to 20 percent find it very difficult and 50 to 20 percent, 15 to 20 percent will find it very easy. But what makes it difficult for a few students? What kind of things that they actually encounter?

00:12:31
Speaker 2: with regard to the higher order thinking skills? I cannot tell you. So what I can tell you is in the project work, we have the normal team teamwork issues, the interdisciplinary issues which like how do how to integrate the things properly, how to focus when you've got so many disciplines working, how do you focus? How do you prove it? How do you do the implicit versus explicit contribution that those kind of issues is the things that I'm looking into. So for particularly higher order thinking, I cannot I cannot actually tell you. Yeah, if if if you could look at it higher level than not high enough, I can say if you could look at it more from a different perspective, if you look at the project, maybe you might be able to draw some kind of. But know that, you know, I don't know how you would do that. Maybe speak to the tutors or something. So say Yes, I can't. I'm sorry. I can't.

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Speaker 1: No, not just yet

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Speaker 2: do I have picked up that, for example, with this module nine that I'm working on now that students find it hard to focus. There were too many options, too many choices because of the open nature of the project. That was quite difficult for them. And then that showed a lack of skill to be able to, to organize themselves, make the decision. But otherwise, I'm not. I'm not privy to the levels of the

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Speaker 1: email, which is already something for me. As a general difficulties that students face in terms of openness and large room for flexibility and freedom makes it difficult. It is so nice.

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Speaker 2: But that's that's something else that we also looking into is that, you know, the closed or not closed, less open versus very open projects. We are finding that just because something is open doesn't mean it's a it's great. It's actually a little bit more structured. More scaffolding gives students much more security and lets them focus on what they need to do instead of panicking and stressing out on factors that are not really helping their learning. It's just getting them into a panic. So. Yeah.

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Speaker 1: I mean, based on Lev Vygotskys approach and zipped zonal proximal development zone, you don't scaffold the process when they are not able to dynamically survive a function that is going to be a problem. So.

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Speaker 2: Yes, definitely. But some people think open is the best and they go, OK, this is the problem. Go. And that's not fair.

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Speaker 1: I think that those people, if they don't know how to swim, we just push them in the water. This is the problem just come out of it.

00:15:12

Speaker 2: Yeah. But then some yeah, some teachers say, Yeah, but that's the process. You know, we want them to struggle a bit like, OK, but they've only got eight weeks or 10 weeks, or I think it's eight weeks, eight weeks to do this. They don't have the luxury of six months to flounder and then come up with a solution. They've got to get this project. In an ideal world, great. Let them struggle. You know, they learn the best that way, but it's not realistic in an eight week, not fair in an eight week module.

00:15:39

Speaker 1: Indeed, I agree. So my next question is regarding teachers. What kind of difficulties as a teacher you face when trying to develop higher order thinking skills for students?

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Speaker 2: OK. So for myself, as I said, I'm trying to create these workshops, I guess, um, which I'm not specifically doing a course on higher order thinking skills. But I think because my topics this let me just have a look at my topics will be for the workshops they're going to be, you know, setting expectations. These are the list of the worksheets at workshops for

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the eight weeks. So setting expectations, organizing and project management, teamwork traps, giving and receiving feedback, communication, conflict management perspective, taking and feedback and reflection. And next steps. So those are my should I say, my topics and I think in that I guess I could pick out and say, I guess that's kind of a higher order. I guess that's kind of a high order. So I think maybe the challenge would be is just translating what I'm doing into saying, OK, making the specific that this is a higher order because this is not a priority for me. So I don't say this is a challenge, but. I guess I could pick them out and make them explicit. Yeah. OK, so a challenge for doing this for me. OK, the first one is you also have to make students see why it's important. You know, we're not just teaching you, you're an engineer. We're not just teaching you funny things, you know. This is important because you need to do this for future employment. This is a life skill. So first thing I think is very important let students know why it's important. Challenging creating is is look, I'm trying to do many workshops because also having these mega long workshops also not really appealing and then things like that. So it's it's being able to put a skill in in a short amount of time. And at the end of the hoping that they'll be able to at least have started practicing that skill, implementing it, developing it. So I think. Realistically, being able to. To do what to do, what we can in a short amount of time and maybe even hoping that students can actually gain from it or develop anything from it, because also this, you know, left to spend hours and hours on these things, but you simply don't have the time. So that was a very long, long answer.

00:18:22

Speaker 1: I mean, it actually gave me a lot of insight from a designer perspective of such workshops. And obviously, time and the number of students that you deal with, this is one of the crucial factors in teaching in general that we don't have enough time as teachers and not have enough time to give individualized attention to all the students. So. Your experience stems, I think, from your response, what I infer is that more from a designer point of view of not able to kind of put all of these constraints that you have in terms of time and the level of expectations that you have in terms of that skills and create a module. And still, yeah, make it interesting for students.

00:19:06

Speaker 2: interesting And then also valuable is what I'm doing my my little mini workshop. Is it actually, you know, what's my intention? Am I trying to plant a seed that they know what these what these tips, what these things will do, what these things are, that they can do it themselves? Or do I have to really hold their hand and say, this is an example, this is what you have to do. So it's also finding a way of how how students can actually get value from it. Yeah, indeed. Because I can't rely on them and say this is would be a great way to do it. Go have a look yourselves. Some students will do it, other students won't. So there's the balance of up to what level are we we actually guiding the process of developing these skills?

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Speaker 1: But that is always a tricky process when you have so many different levels in a single classroom. Exactly. And I can certainly recognize it. So thank you. Thank you very much for patiently answering such questions. My next section is all about brief section is all about interdisciplinary approaches, so I tend to work on interdisciplinary education. It is.

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Yeah, I would like to know what is your definition of interdisciplinary approaches in engineering and the research field?

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Speaker 2: Yeah. So then you know, there's the there's the whole debate of multi, inter, trance, all those things. And actually, I did admit that I show you already. I did a very I'm very proud of it. And my did already sent it to you. My thesis, I did a new and nice. Let me just show you just give me a second. The nice table. So I didn't like calling it interdisciplinary stuff. So I wanted to call it interdisciplinary socializing because I just I didn't feel like it was quite, you know, people and then people work together and people make the connection. So let me just get me the image that I made for that. Just give me one second. OK, I'm just going to share my screen with you. This is what I made, I was very proud of it. If I could make it a bit bigger. Yes. So then, you know, there's the definitions, so then you're looking into how you can really take into account other people, other disciplines, knowledge and integrate. But then I also did this thing of what capacity. So comparing, you know, you actually really integrate as opposed to with a multi where you appreciate other people's input. You know, you're like, Oh, that's a really good idea. But this integrate, you do have the next level and you actually really try to bring bring it into almost like evidence of it in your project. If you think about boundary crossing. Yeah, look, I'll just send you this picture. So so this is my thing of interdisciplinarity. It's going the next step of not just working with people and people doing their own their own. How can I say their own working in their own silos? If you do this, you do that, you do this and you get that stapler effect, they call it. So you don't want it's not that it's it's really trying to integrate and almost where you can't quite see, you know, you can see, but it's you really trying to to blend and merge the disciplines. Yeah. But sometimes it's not always obvious. Like, for example, with the model I'm working with now, they'll have a not only engineering students, so it's also this maybe psychology students. So then it's maybe not always completely obvious in the product. So then I guess you have to find a way to prove maybe that maybe the psychologist was very integral to the process of it, you know, who knows? I don't know. So it's a little bit difficult when I think when the disciplines are more diverse. I think that's a big.

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Speaker 1: thank you very much for sharing actually it. It is definitely helpful for teachers as well to be able to have some idea and grip on these items when they are talking about.

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Speaker 2: Yes, but I think they just use quite quite interchangeably the melty and the into. It's just it's like, OK, put people together. And when people claim their interdisciplinary, they're just generally multy. It's generally OK, guys. We've got different groups together. And but then again, it was an article once about, you know, maybe there was an article or a comment on an article about, you know, we're trying to pick, you know, pick up the definitions and actually, don't worry about that. Let's get the students at least working together. And I guess it can be more clear in your outcomes in your project outcomes at what to what level exactly it means. But yeah, definitely getting them exposed to each other and working with each other. Yeah, that's advantageous, I'd say.

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Speaker 1: Yeah, thank you. I mean, it is kind of how do I say, bit more granular version from

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the other interviews that I've had in terms of interdisciplinary approaches. Obviously, this is one of the topics that is close to you. Yeah, think so. I'm very happy to have at this tends to, yeah, listen to this. So my next question is more along the lines of skills and interdisciplinary research. Now that I can see, you have kind of a very clear idea as to what interdisciplinary research entails more or less, what kind of mental skills, thinking skills are the most important in order for a student to be able to perform at the integration interdisciplinary level.

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Speaker 2: Mental skills, I guess you also you need to have flexibility and you need to be open. That would be a prerequisite because we often come across students saying, Oh, that guy from that discipline he was, he was not flexible. He wouldn't listen to his was the best way. So, you know, I called in my thesis the epistemological hierarchy or whatever. So so they perceived their one as the best one and maybe a little bit looked down upon the others, and that was the best way to do it. So, you know, you've got to be when you go in there, you have to be open, flexible and realizing that you don't know, you don't know everything you need. You need to be open to other students input about how great. Maybe yours is the best one, but you also have to look at others and see maybe there's other ways to do things. So I think that the key is to be open and flexible. And then also you need the different skills. I don't have if it's mental, though, but you need to have the collaboration skills to work with people. As I said, the communication when problems come about, how can you come up with the best solution because conflict is not necessarily a bad thing, you know, conflicts great because that means you're challenging each other and you're trying to negotiate, trying to argue for the best, for the best input, a result, whatever. It is, but when you have the relationship conflict, and that's when it's a problem because, yeah, you don't like that, you don't like your teammates and that's that's a problem. So you got to stimulate idea conflict, but not personal conflict. OK. So sorry and reflection, sorry, reflection. But that's kind of afterwards. And that's also very difficult to do because how do you know if what you what you what you're reflecting is actually what you're inflicting or you're just doing lip service, who's going to facilitate that? Who's going to mark that? And if they're ready for it, I find all the time. You know, the maturation point is really, really obvious is that some some people are just not ready to reflect yet. Maybe in their 30s, they'll be ready, you know? Who knows, but it's also something of maturation, and some people reflect very, a lot like, for example, the psychologist apparently that do reflect a lot and they quite use that. But maybe the engineers are not that used to it. And yeah, so it's it's. It's also and also assessing that is hard, and also if you reflect and no one's giving you constructive feedback on that, it's it's wasted, then you just putting it into the air, you know, of course, you can still get a little bit of value from yourself, of course, but you need to have that sounding board to check if what you're saying is is on the right path, whatever. So that's also a labor intensive for teachers. So it's also trouble.

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Speaker 1: Thank you, thank you very much. I think there are a lot of things that can also be applied in general for, I think, a for, for higher level academic performances. So from Inter for interdisciplinary research, particularly if I could just reformulate what you said, think

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openness and flexibility and humility. And can I just say that these are all kind of an attitude rather than a mental skill that you still have to?

00:28:52
Speaker 2: Yeah, But that attitude can be. I think that can be at least, you know, taught or adjusted or at least trained or brought to their attention so. In that regard, it's it's not a fix attitude, it can definitely be developed.

00:29:13
Speaker 1: It's true. So yeah, that I find it actually very interesting because one of the things that I noticed when I did my masters in my previous institute, which is called Center for Interdisciplinary Center for Research and Interdisciplinarity and one of the things that I found the most beautiful and also enriching experience is that all the teachers that I've had experiences or who taught me never showed any kind of ignorance of arrogance about this subject. they showed humility despite me coming from just a bachelor's student to do their master's program. They lost to me as if I have got so much things to offer.

00:29:56
Speaker 2: Yeah, yeah. Actually, you saying that that I found the same way everybody had time for me and were very, very, very, very kind. I would say, especially considering the ridiculously busy schedules. Yeah.

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Speaker 1: Yeah, I think that way. I think, yeah, it's kind of influenced in that being in that atmosphere as well. I've understood what makes these teachers different. One thing that I've actually noted down is that humility most of the teachers on average should in an interdisciplinary context that they know something, but not everything. They are always. So if you learn so, that's great to actually recollect those things from what you said and also in terms of skills, actual personal skills, kind of, you know, conflict management, the ability to communicate. So particularly interested more in the communication aspect when you mean communication, is it just general communication, the ability to articulate and yeah, this

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Speaker 2: yeah, there's all the different ones. So just, for example, last the last iteration, when I tried to do the communication workshop, the self led one I focused more on because it was online and because it was, you know, the lockdown situation, the more of the nonverbal communication. And, you know, in meetings making sure that you're you're not like you nodding, paying attention, trying to make eye contact, give input, you know, make sure that, yeah, so this is a whole range. So if I if I also again, if I had lots of time to do the whole span, I would love to do. Yeah, the things from presenting, you know, the presenting skills, how to how to do, how to communicate with stakeholders, how to be respectful in your group, how to make sure your you're right. You know, you're able to express your ideas in a clear way. So but but for the previous one, we just focused on fixed up a bit of COVID teamwork situation with online online meetings. But yeah, if I had time, I'd love to do the whole range. But definitely also again, a bit of reflection. It's like, you know, how if situation goes, go south, you know, if it turns a bit bad, we look at yourself, what did I what role did I play in this situation? Why is Bob so annoyed with me? You know? Oh, it's because, you know, maybe, maybe the way I'm saying things, it's not really respectful. Or maybe the way

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I'm saying things, it's not really clear. So it's misunderstandings. So it also comes in reflection of of of how you how you communicate.

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Speaker 1: But yeah, yeah, I think reflection plays a major role and that is what I'm actually quite interested in when you say reflection. What does it exactly mean in a general context? And if you can relate it to interdisciplinary approaches, if there's any specific kind of?

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Speaker 2: it's it's it's difficult. So what? We're what we're trying to do with this iteration, this is Module nine. They actually have a reflection project to do, and it's I think it's like ten percent of their thing. But the problem is it's it's a little bit also a bit strange we are going to change it now because they say, you know, reflect on your project management skills, but they didn't teach them any project management skills. And how can you project manage if there's nine other people in the in the group in a in an eight week course, it's not really fair. So what we've got, we've scrapped that and now we're going to go and do via the buddy check where you have five criteria that the teacher sets for you to assess yourself and the group. So let's say, for example, I can't remember, let's just say it's a team team, but you know, a team contribution, you know, working hard, you know, general things that you want from your teammates. So you have these five key things. So you assess yourself and then you assess the team, then you get a report and you get a report what the team thinks of. You compare to what you're expecting, even show you let me show you, I've got one, actually. What your team thinks of you. Hmm. I'm just going to share. Again, could you see? So, um, so this gives you material on which to reflect? Hmm. So I think of myself, I'm extremely knowledgeable and the team says, Oh, you haven't been? OK, so that gives you material to go, OK, well, the team. What if it's also revealing the team hates me and they never liked me from the start? And then you can go, OK? Feedback. Is that true? Whatever. So whatever. So this gives us the material that the students can reflect. This is our new iteration. This is our new chance that we try to look at. So, yeah, so this in this regard, it's reflection on behaviour or contribution or whatever our criteria will be. So that's that's how we can make it a bit more explicit. And that helps us in compared to compared to other maybe modules where they have a tiny reflection report where you can actually just make up stuff and go, You know what, when I started this, I really didn't like this, but now this is where I am and I'm great, you know, one student told me zero to hero, you know, that's what they say, you know, so I thought that was really a good one. So you don't know if they're making it up, but maybe this is a little bit more of a hold on

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Speaker 1: indeed

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Speaker 2: on, you know? Yeah, because I was really disappointed that they didn't think I had so much knowledge. And when I think back, OK, maybe this, you know, you know, so this is still a work in progress. I would love I would love reflection just to be a natural. And to you know, it's a natural process for students, but you know, they're also they're also busy. They've got this their lives, their focus, some of them are focusing on getting it, getting it done, move on to the next one. But in an ideal world, it'll be great if they could, you know,

take some time during and after. Think about what they're doing, where they've come from. But yet, yeah, I don't. I don't know if it's really, I think.

00:36:14

Speaker 1: Thank you for sharing that because my next final question was that regarding metacognition, I think when I mean metacognition, it's probably in simple terms, reflection. I think what I mean, because I take I tend to build on the vocabulary proposed by John Flavell. It is. Think about your own thinking processes. Yes. And so the cognition, yeah, the relection is all about how probably you came to a conclusion, what led to what and to actively precisely reflect on those and try to, you know, change, regulate your own behavior and actions. So I think I've already got the answers from you. It's just the difference in the terminology that we use. Sure. Sure.

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Speaker 2: Yeah. But yeah, it's very difficult to track, very difficult to assess, difficult for teachers, for manpower, for teachers to go all through, to go through all of that. So I think it's for me also, it's a bit of a conundrum. The inflection part.

00:37:18

Speaker 1: Yeah, yeah. I think yeah, the. Just to I mean, how I imagine to implement such metacognitive reflection and try to track those things also for teachers and students to be able to like embedded in a tool like this and on an average so graphically to the teacher how much higher, for example, 40 or 50 students stand in terms of this thinking at this level, not giving any precise detail on the student, but more an anonymous average of the class that can basically take some steps towards improving. OK, this is really the kind of thing that I don't want the students to go. So I would have to change so that way. And I'm just trying to understand for teachers, it's more adaptable because it gives an average and for students, they can get an individualized view as you just showed the things they lack.

00:38:13

Speaker 2: But how it how would you know that's what what you're what you are showing teachers is the real truth. That's the problem is that you have to just rely and hope that the reflection that they share are, yeah, truthful. It's difficult.

00:38:31

Speaker 1: Now it is not as objective as we would like it to be on these subjective. But at the point were given, I think given developments and knowledge we have regarding this topic and I actually thinking of going this way, at least to see how actually it develops in the overall performance of the students. At the end of the day, if they can make a correlation positively, that would give us some edge to support. Yeah, the approach that we take that is,

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Speaker 2: yeah, I know you are you. Are you trying to also make sure that the the program is, you know, throughout the first year, second year third unit builds up is going to be

00:39:08

Speaker 1: ideally the the case make it more incremental and progressive, depending on the level of maturation of the student. Just great. Great. Great. They are bachelors. I'm trying to implement this and bachelor's level with the first years. They are very naive and not yet very critical things. But then, yeah, but I also

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00:39:27

Speaker 2: you also have to also think about the the the education of the high school education of the students. I think that students are quite well supported with their I don't know because my husband is Dutch and he went to high school many years ago, let's say, 20 years ago. But the way he speaks about high school, they, you know, they were taught to, you know, really be critical from a young age. So I think also coming in yourself to also slightly understand the cultural and because especially if Twente is becoming more and more international a baseline that you know a little bit about how the education that the pre university education is set up might also give a good indication of possible starting points. But you know,

00:40:12

Speaker 1: pretty much for reminding me of that because the previous year, it's been just a year I've been in, university of twente that I interacted with. The first semester students were quite critical, especially the Dutch students, and I was very impressed because even the top performing students where I come from in India tend to have higher scores but not have ability to critically analyze very in detail. But I was really impressed that the school education has strengthened the focus.

00:40:43

Speaker 2: I'm not sure how they do it now, but my husband really said that they used to take the same story with, you know, how many different newspapers and go, OK, look, these are the different perspectives. Let's have a look at this. Let's you know, that says really just teaching you to question what's out there. Obviously, they teach them the steps on how to do that. So yeah, it's something to consider.

00:41:03

Speaker 1: OK, thank you very much. And I have actually been thinking about it to understand the baseline where students actually start from. And then that is when it becomes a bit more effective for me to evaluate. Definitely. Definitely. Yeah.

00:41:15

Speaker 2: And also, if you like, if there's some kind of way that students can self-assess, they can see where they are and where they need to go. Because we, as teachers, we can't just assume there's no way we can assume that. So you have to really differentiate and really make sure that those that maybe they can follow their own learning path if they have the option to do that, that might be nice indeed.

00:41:35

Speaker 1: And the most. I think one of the most challenges in education is to provide that kind of individualized. Yeah, but then back and everything you will try to get

00:41:47

Speaker 2: or at least have the three levels of beginning developing and then

00:41:50

Speaker 1: yeah. Yeah. I think I've covered most of my questions. OK, great. In terms of the interview things and it has been a delight to listening to all of the responses actually very enlightening for me to have a lot of responses. Pretty much the way that I also perceive

things and a bit more newer perspectives. So it was very useful for me. Thank you very much.

00:42:19
Speaker 2: Sure, you're welcome. You're welcome.

00:42:20
Speaker 1: If you have any questions or comments. And before I close the interview, please,

00:42:26
Speaker 2: um, no, I don't think so. I think just keep in touch and then we can yeah, to see what this guy is because. OK. I say we got a bit of overlap, I think.

00:42:36
Speaker 1: Yeah. We will have that then a lot more opportunities to discuss and present and see how things can actually . Maybe at one point we could have some combined effort. Yeah. Yeah, cool.

00:42:50
Speaker 2: OK, thank you so much. Yeah. What? What transcribing are you using? You're doing it right?

00:42:58
Speaker 1: I haven't yet picked up the tool, my duties at the moment is to collect data because I'm on vacation officially, so I'm just doing literature review and then collecting data. Once the acacdemic starts, then I will have to do the hard labor intensive work, transcribing, etc., etc. So I'll get some suggestions as well.

00:43:18
Speaker 2: But you know that amber script does the transcribing very nicely.

00:43:21
Speaker 1: Hey, amber script, OK? Yeah, because I think the same tool was suggested by me as I just did by my postdoc, one of the postdocs in our team.

00:43:31
Speaker 2: Just. But you've also got to get you've also got to get permission done if you've done it already, but you had to get permission to interview people already. Have you had you? Okay, good. Because then they then they then when you get that, then you get your amber script. You can apply for amber script.

00:43:47
Speaker 1: Now I did get my this ethics review.

00:43:49
Speaker 2: Yeah, sure, that one and that. But amber scripts pretty good. So yeah, it's great. It's pretty good, sir.

00:43:58
Speaker 1: Thank you. Thank you. Sure. Good luck. Thank you. Have a very nice day.

00:44:02
Speaker 2: And it's like, OK, it is, but I.

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