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*Speaker 1:* Yes. Thank you very much. So can I get your introduction very briefly for the purpose of the interview?

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*Speaker 2:* Yes. So I'm working at the university now for six years and I'm and I worked at the police academy when I finished here with my educational. I was in high school and dutch... educational design. Then I worked for an internet company. And then over 10 years for the police academy in Appledorn, Amsterdam, everyone was all Netherlands. And then I came here to work to become a trainer. That was my objective. So I developed a lot of training sessions, and I did a lot of training, but also worked in the TELT team. So the technology enhanced learning and teaching multidisciplinary team is did coordination of the MOOCs. So also, the development process of the MOOCs is also an interesting mind shift event, and it's support ITC faculty of ITC to information in. So I did that for, I think, four years and now I made a change to go to the team of Challenge based learning. So I left all my other work and now I'm focusing on the challenge based learning and seeing also the teacher professionalization. It's also about these kinds of things. So it's a different mindset that you need. Yes. And how do we get teachers? How do we train teachers in getting that different mindset? That's a challenge.

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*Speaker 1:* Thank you. Thank you. Very nice introduction. I think fits perfectly with the subject of my research. So my research is all about, higher order thinking skills. As they said, I would like to know what is your perception or definition, our understanding of higher order thinking skills? And you mean, what do you mean? What kind of things come to your mind?

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*Speaker 2:* You know, what comes to mind is, is a lot of things. But I think the thing about critical thinking and to think about transfer comes to my and also decision making. So when you really think things through, it's, for example, to teaching professionalization, but also in educational design, also in when you are in actual implementation of education, it's all about making decisions and based on what do you make decisions? And and also with no knowledge, people can make decisions. And so it's also the combination about decision making and based on what do you make decisions? So your knowledge base and I think that has to do with those higher order thinking skills because that's also what students will do when they graduate or go to industry or go into research. They need to train that skill and to look, yeah, go into depth, but also look broad. don't have tunnel vision that kind of things.

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*Speaker 1:* OK, so if I understand correctly, higher order thinking skill is alla about. Just correct me. If I'm wrong, I'm making decisions.

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*Speaker 2:* Yeah, I think making decisions using.

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*Speaker 1:* Using critical ability to use the existing knowledge in order to make some decisions. Yes. So that is the first thing that you think is what, you know, hatred of the extremism. And as you mentioned in our previous conversation that you kind of train

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teachers or develop training sessions. Do you also focus on developing training sessions for higher order thinking skills for teachers?

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*Speaker 2:* Not not yet, because then when I create training sessions, it's only a small period of time that we are in contact. So what you try to do is to yeah and motivate people to make a thinking step by asking questions or posing problems or giving examples. And so the thinking process takes a long time to develop. It needs time. It's for people.

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*Speaker 1:* So you kind of use some sort of, yeah, a kind of teasers like questions that makes them to think, Yeah, yeah.

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*Speaker 2:* And stuff.

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*Speaker 1:* And yeah, just in case I'm not sure. Yeah, you said it was very short amount of time that you involved in teaching and such things. Have you measured the development of thinking process?

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*Speaker 2:* No, that's a challenge.

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*Speaker 1:* So what is your opinion of you as a trainers for teachers, if any suggestions, if you were to give in terms of measuring and teaching?

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*Speaker 2:* Yeah, yeah. How can you measure it? Assessing, yeah, yeah. Assessing, yeah, yeah, you can assess. I think the products that they create. So I can remember also with one of the professors that wanted to redesign this master program. And so I talked to him, but he's also very smart. So that's also a difference. Yes. And so you can really think and he wants something. Not really problem to solve. But then you give him some input, for example, the model of Jerun. And and then he creates something and then he sends it to me and I look at it, OK. I think he understands what it's what's the purpose? And then I looked at a video recording of his first lesson where he explained what he wanted. oh Yeah, he understands the thinking process that that is different. Then I see the reaction of students, and he doesn't react on it, so there he misses the connection. He is here. The student is here in. Thinking so so there you can see if someone grasps the idea about what's what you want to do in that complex. Yes. And what the purpose of education is is, is that we never measure it. Yeah, we don't really measure it.

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*Speaker 1:* Is it because we don't have the methods yet

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*Speaker 2:* what we say normal. What the measurement normally is in the you UTQ is a reflection document what STUQ, senior qualification also a reflections document. But it's also difficult because the people also need writing skills to the

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*Speaker 2:* articulation.

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*Speaker 2:* Yes. So is it that they don't have the skills or are they not able to put it on paper?

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*Speaker 1:* Yeah, that's always a struggle to find. Yeah. OK. So from your experience as a teacher trainer, or advisor how hard? How much are percentage, if you were to put a number on it, teacherrc, like, say, would have an idea about higher order thinking skills and explicitly teaching them?

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*Speaker 2:* I think maybe I think more experience. I think. I think people they know what they want, but they are not able to. And how do you make make it concrete in, for example, in their lessons? Yeah. When you ask them what is important, yeah, what do you what do the students need to do then they say this would. When you look at the lesson design, it's still low level. Yes. So they know what they want, but they lack the skill, how to transfer, yes, and create a good educational design.

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*Speaker 1:* Indeed, So obviously, based on educational design methods, if you are not confident about what you're teaching, you are not teaching them. No. So you make it explicit. Obviously, the research has shown tons of it's been that you explicitly communicate and then create. etc etc So if a teacher, obviously from experience, knows that this is what important thing, but probably lacks proper methods and vocabularies and tools to implement it, then they're not able to effectively teach that. Yeah, but still then we are lacking in that aspect as teachers. So, like the majority of the teachers, is the case or minority.

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*Speaker 2:* I I cannot really say, is it?

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*Speaker 1:* That's why I'm on it already this, I think from my experience as well as with the interviews, the similar back in the day agree on. Yeah, great. So that is about mostly hatred of thinking skills. And I would like to know in terms of challenges that teachers face in executing this. So, for example, even if they know what higher order thinking skills are, what are the challenges at present except time which we already have? So what are the other challenges that comes to your mind for teachers and what could help?

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*Speaker 2:* Yeah, the challenges for teachers are maybe also that they are just they are stuck in a kind of organization, traditional organization. So to break free from that organization, take some courage and some creativity and some guts to do that. It's easier to just go with the flow. And so that's that's the thing, I think. And also, I think it's also the university, it's it's also how US researchers are educated. You have to do it yourself research also share and get feedback and do that kind of things. But also when you do in your Ph.D., it's your thing that you need to do is. And I see that a lot of people are not used to asking help. So now you talk to me because it's part of your research. But I see a lot of teachers just doing their thing

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when they are. When you are appointed as a teacher, you think, Oh, I'm the teacher, I have to do it. And then so people, sometimes some people ask that a lot of people don't ask. They just want to do their own thing. So I think that's that's maybe also a challenge that needs to be solved. Mm.

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*Speaker 1:* It's a challenge. So what could help?

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*Speaker 2:* What could help is. Yeah, the office thinks good examples and sharing knowledge time. Positive learning environment, but also for the determined self, is that they are open to learn and experiment. They get room to experiment to create a learning environment for the teachers.

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*Speaker 1:* We often forget we are also individuals who need to learn.

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*Speaker 2:* Yeah, we need to learn. We never stop learning. Indeed. But you have to realize that, yes.

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*Speaker 1:* Thank you. The example is sharing knowledge, positive environment for them to learn, especially room to make some mistakes.

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*Speaker 2:* Yeah, that's the basic things, but it's difficult and I also agree with it because have people don't want they also train not to make mistakes? We always look at we always only look at the top. And we don't look at all those people that are underneath, I saw a video on LinkedIn last week. It was also about that everyone needs. Not everybody. It's also OK not to be the winner. If you don't know the way, just follow someone is also OK. So you need to have a more open mind to to to people that are also doing good things. Yeah, not only the people that are in the spotlight and in this. Everything's always focused on the people in the spotlight, especially

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*Speaker 1:* True obviously, I mean, without the other people's work, there is no leader that is in the spotlight, you know? Yeah.

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*Speaker 2:* So you have one leader, but maybe 10 people doing the work.

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*Speaker 1:* Yeah, that we need to do.

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*Speaker 2:* And we also need to

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*Speaker 1:* acknowledge this very well said, I totally agree. I also don't like to be in the spotlight, so much so that is mostly about the higher order thinking skills. The second thing

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that you you've already gave me a suggestion about Jerunroo kind of thinking skills is there any other person or theories that you have

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*Speaker 2:* got, there is one book and I will send it to you. It's not a book, it's it's a European research project about all those. It's a list of all those skills that that are defined as the higher order thinking skills and the definition and the thoughts and everything And it's not about one. I think it's 20 different skills. Indeed, indeed. So there are some book about it. So I think a good starting point because it's really done very extensive looking at the definitions and.

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*Speaker 1:* So far I have referred some resources at the European level is that is from all OECD that they've tried to organize some ski Basically interms of thinking skills, basically under the categories of sea communication, critical thinking, creative thinking, leadership and collaboration under which there are multiple different things to find. Yeah, but it would be nice if I could also get some more.

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*Speaker 2:* Yeah, I will. I will think about it, will look in my list and then see if I can come up with it. So, yeah, it's also about the academics, the academic skills. Hmm. Yeah.

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*Speaker 1:* Since you're a trainer, I'm just a little bit going further into the theories. Yeah. Do you or are you familiar in the sense with the cognitive sense theories oor psychological studies, educational theories as well combined the relation to higher order thinking skills?

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*Speaker 2:* Yeah, I think I am, but I can't really say now at the moment because it's also and I think always, yeah, you have a do you say for career, you like a certain kind of way of looking at things and that for me, is also the cognitive way of looking at things So. I also did the evidence based part, and it's interesting, and then you get into cognitive

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*Speaker 1:* yes

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*Speaker 2:* side of learning theory, and it's that kind of things. And. So that's also interesting the way to research into the challenge based learning because they say a lot of things. Yeah, indeed that we need to also have have a concrete and practical implementation of it. Yeah.

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*Speaker 1:* OK, thank you. So that is all about higher order thinking skills. Yeah. Obviously, there is one component that I will come back again. Yeah. But I would like to move on to interdisciplinary research whiich is closer to your challenge based learning Interests. What would be your understanding of interdisciplinary research? What do you mean when you say interdisciplinary research?

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*Speaker 2:* Yeah. What I what I think about is and. Did you also have contact already with Cindy Portman?

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*Speaker 1:* She is one of my thesis advisor.

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*Speaker 2:* OK, because she's in that area. Jan van der Veen. Was left the university? You know, she she took over. But the interesting thing is to look at what I find interesting is to look at history. And so what you see we all know Darwin. But do you also read the book about Humboldt, German German researcher. It's an interesting book about how he did his thing, but he I think he was trained in earth sciences, but also in so in that time, when, when and how do you say that kind of research started? He made connections with very different disciplines, so us earth science, but also into poetry and in literature and nature and observing and going to do things. So I think that's that is something that we can bring together again in interdisciplinary research so that you feel comfortable also in a different discipline. Yes. And but you really need to dive into that discipline, I think. Yes. So we don't take the time anymore to to study very different things, things so we have to minors. And so but it's only superficial only for a couple of months, and it's not enough time you need to study the subject, maybe one and a half year and then combine things. So I think that's that's something that would be interesting to to also look into people that are educated. I think it was even in the story of Victor van der ... that he was educated in law and then made a switch to social science, something different. So those are people that are educated in different domains. And then you see, then it's not about I took the wrong study. It's more about that. That makes you strong. Yes. And that makes you different. Indeed, it's I'm a mechanical engineer in education. So that's also you were also an engineer. You know, you are in the philosophy work, education, education, philosophy. So that combination, that's what's making things interesting.

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*Speaker 1:* Think indeed. Indeed, I totally agree I am a product of multiple disciplines. And so in order for one to navigate, we've actually artificially created disciplines, discipline oriented studies through education systems. Yeah, which trained our mind to function in a certain way in relation to higher order thinking skills. Yeah. So when we come back again to this kind of interdisciplinary, multidisciplinary approach, which exists naturally. Yeah. What is the most important thinking skill, or higher order thinking skill that is important or what are the important skills for that?

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*Speaker 2:* It's difficult. Yeah, maybe it's about it has to do has to do something with open minded and being and being aware of that, you are, uh, thinking or your mindset. It always is not set, but it should be. You should always question your own mindset. That's I think, the thing that you need to learn and you learn that by being in, I think, different contexts. And also, I think it's not because in education, you train something you tested and you pass or fail it, but with these kind of things you learn, you talk. But maybe two years later, then you think, Oh, one year ago, or maybe two years ago, they talked. They talked about this. So there's more time between the learning or the cognitive process and the end result.

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*Speaker 1:* So I mean, it takes a bit of time. to digest

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*Speaker 2:* digest, to process

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*Speaker 1:* process, to process at the higher level. Yes.

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*Speaker 2:* You don't forget, you get in another context and then you think, Oh, I had a colleague of mine and he talked about things. And then half a year later or a year later, then you see it. And then I think, Oh yeah, that's what he's talking about, that kind of process. And can you? And yeah, **make that more speed up that process or not.** That's the question. or Can you simulate that process so that you get more aware of that process happening?

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*Speaker 1:* So if I understand correctly is it connections that you're talking about and making connections between previously learned things and stuff?

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*Speaker 2:* yes. May be it has to do with that so that pre knowledge part is i think very important and. How do you say? it's not getting the attention in education? Yeah. Activating the pre knowledge? Yes, it's very, very, very important. We should give it more attention.

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*Speaker 1:* Totally agree. If they do not find any connection to what they are learning, it is going to be more pointless. **So you said being aware of the mindset. Open minded. What do you mean by open minded?** Could you elaborate a little bit?

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*Speaker 2:* Yeah. Also to open minds is also to do with being reflective.

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*Speaker 1:* **So being reflective could also then connect to being aware of the mindset. Yeah.**

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*Speaker 2:* **So that's the metacognitive cognitive that you need to to develop into thinking about your own thinking process, what is what is happening? Why am I thinking that is not relevant?** Yeah. I mean, what makes that this new information or this person? Can also be a personal thing, and someone tells you something, say, I don't like you as a person, so what you're talking about maybe also not relevant? Yes. And then you ask yourself, why don't I like this person? Why do I not connect with this person? Yes.

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*Speaker 1:* Interestingly, that was my next question. Oh, I see. Thank you so much for going there as well. So my question is about how do you then, usually based on my interview teachers have no clue about what metacognition is? No. But they all know, as you said ,kind of, this is important being kind of knowing about the things and stuff but they don't have an understanding, clear understanding.

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*Speaker 2:* No it's also a difficult concept. Yes, I never understood metacognition until maybe now. The last five years or so. So that's.

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*Speaker 1:* Yeah. So the question I've got around the metacognition is that What could help students to develop such skills? I mean, what could help teachers to develop to students? Yeah.

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*Speaker 2:* What could help teachers to develop students? Yeah. They say teachers are coaches, but. So. It needs **questioning skills for teachers**, it needs also to not put teacher you as a teacher as a number one. Build interest in students and also accepting that students are not maybe ready for your thinking process. You also have as teachers. That's the big thing also how do you say. Not not able to to. Curse of knowledge. So you are so that's what I see with myself, because you get better than you lose connection **with people that are just starting with teachers, you make it too difficult. Yeah, and then you lose people. So that's that's something you have to be aware of.**

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*Speaker 1:* So you mean like kind of finding the right zone? Yeah. For them to connect with students,

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*Speaker 2:* you should be able to to act on a high level, but also go down to act on a lower level

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*Speaker 2:* To switch that switching behavior is important.

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*Speaker 1:* So you mentioned metacognition being referred to OpenMinded in the context of interdisciplinary research. So do you strongly believe that this is obviously important in every context? It is quite more important, relatively in interdisciplinary, multidisciplinary context. These kind of skills are.

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*Speaker 2:* Yes.

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*Speaker 1:* I think you've covered almost all the questions that I had. So if you have any more suggestions and important information that came to your mind, which I probably would have stopped in between please feel free to.

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*Speaker 2:* Yeah, because all this talk, it will resonate the coming week and and I can think of all. Yeah, that's that's how it's connected to you. But also, I'm very interesting in your research. So if you need something or you need some help or yeah, you want to do some observations or just ask me. Thank you. Or if you just ask me.

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*Speaker 1:* sure, then thank you very much. This is the official end of the interview. Thank you very much for participating in the Research and I have a couple of questions.