

Podcast series: Leading for Interdisciplinary Creativity

IDBM programme at Aalto University

Episode 6

Length: 47.22 min

Guest: Salu Ylirisku

Host: Irina Viippola

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Aalto University podcast.

This is leading for interdisciplinary creativity, and I am your host Irina Viippola. In this episode, we explore innovative teaching methods and the essential skills students need to thrive in today's dynamic world. We'll examine strategies for keeping skill sets relevant, along with ways to support the development of future problem solvers.

We'll also discuss the critical role of learning from failure. Our guest today is an expert in design education with valuable insights to share.

Welcome, Salu Ylirisku.

Salu: Thank you.

Irina: Before [00:01:00] we start our discussion, can you introduce yourself and tell a little bit about your background?

Salu: All right. So I'm slo I have background in computer science originally from the University of Helsinki, uh, where I focused on user-centered, um, user interface, design of computing systems.

Um, then I moved to industry. I was there for a couple of years and then. I started like more than 20, 20 years ago in, in the University of Art and design

design researcher. My focus was user-centered, uh, concept design. Uh, the, that's where I'm still working with the IDBM students.

Irina: Hmm. Okay. So user-centered, uh, concept design.

Can you describe a little bit what you, uh, mean by user centered concept design?

Salu: Um, so user-centered design is, um, typically designers just talk about design. Design is kind of, uh, [00:02:00] through reach, foundation, user-centered because you, you want to create something that's meaningful and valuable to people.

And that's, um. That's, um, probably that tradition. What, uh, concept design of what I also call conceptual designing, um, that I did my industrial study about it. It's more about kind of making sense of things and, um, that, um, is not limited only to the, uh, field of industrial design. Um, but it's very relevant.

For example, currently I'm working with electronic engineers. And, um, in that field as well. Um, people should have skills to communicate and to make sense of ambiguity and so forth.

Irina: Hmm. So you're teaching the IDBM, uh, students, uh, here at Aalto. Uh, what, what kind of, uh, courses you are running for them?

Salu: So the.

A [00:03:00] course that I'm teaching is called, uh, Networked Partnering and Product Innovation, Neppi for short. Yeah. Like it's easy to remember by that name. Um, the course focuses on just concept design mm-hmm. In the context of connected technologies. So we are talking about internet of things. Um, and, uh, yeah, it was a challenge.

I, I will. Get back to that kind of, how, how the course was a total failure when I started it, but now it's working and, and students seem to love it.

Irina: Okay. How long have you been running it now?

Salu: We started the course in 2018.

Irina: Okay,

Salu: so seven years if I count right?

Irina: Yeah. Okay. Uh, and have you been teaching any other courses for the IDBM uh students?

Salu: Not for IDBM. Uh. My main focus in study or teaching is for, um, engineering bachelors where I'm teaching, uh, design thinking [00:04:00] and electronic prototyping and advanced prototyping where the students actually create complicated technical things. I'm not anymore asking the IDBM students to do that. I, I learned the hard way that it's not the way to go.

Irina: Okay. Too complicated. Yeah. Yeah. Okay. We'll get back to that a bit later. Uh, what kind of skills do you feel that students should have in today's world?

Salu: That's. Brilliant question. I have been challenged by that myself very much. When, when traveling through the journey of, um, first starting with technology in computer science, uh, there it was apparent that you need to learn to program and to think in terms of what the computing systems require.

Um, we still have today, uh, and in an increasing manner, computing systems around. So we need to have. Some specialist skills. [00:05:00] Uh, I think all the students should possess some special skills re regardless of what they're studying, uh, in, uh, design. You need to have some hard skills. You need to learn to model or you need to learn materials, structures, mechanical design or something.

Uh, in engineering, it's, it's different, but, but that's the specialization. You just need to have something that you can actually do so that it, uh, it works reliably that you can deliver functional results. Um, then, uh, the main focus of my journey, uh, as a kind of pedagogist and, um, researcher have been, uh, trying to understand what this conceptual design or reflective practice of, uh.

Work, um, is about, and, um, I have been developing a lot of theory as well as, uh, practical methods for teaching reflective [00:06:00] thinking.

Irina: Hmm.

Salu: Uh, so that, that's, uh, big. Um, and, and theoretically very deep. Uh, difference between engineering schools and design schools. Typically in engineering, you don't find that a reflective, uh, thinking, educated that much

because the focus is on these, uh, teaching specialists who can reliably, uh, and in controlled fashion, uh, solve problems, technical problems.

Then there's a, um, also a third set of skills in addition to the specialist and reflective skills of designers. Um. That's something that I have named together with the head of, uh, design Factory to appear cloud. We, we invented the name to call this the shaping skills.

Irina: Mm-hmm.

Salu: Basically, it's the ability to provoke change to actually make an impact.

And that has been in the kind of tagline of, uh, [00:07:00] or slogan of IDBM. Like impact,

Irina: yeah.

Salu: Uh, there's the IDBM impact even, even. Uh, every year happening. So, um, that kind of, uh, boils down to what I would call like having learned a particular kind of attitude towards working, like appreciating value in, in a particular way and, and quality.

Uh, in addition to attitude, you need to be able to and have this kind of, uh, uh, initiative taking, uh, how I say mindset. That you actually get things running, get things started. Um, you explore, um, in a self organized manner. And then thirdly, you, uh, part of the shaping skills is, um, agency. So you need to actually gain a position where you get things done.

And that, um, that set of skills requires a lot of teamwork, communication. [00:08:00] And, uh, gaining resources, negotiating with people and so forth.

Irina: Yeah. So what kind of pedagogies can educators then use to make sure that this, uh, skill set, these three different skill sets are, know hows also are relevant in the future?

So whenever we are now teaching for the students, that it will be also relevant in the days to come.

Salu: So there are certain things that don't really change. The, uh, kind of reflective thinking is related to change, kind of being able to deal with the changing world and what we are. Experiencing today is increasingly speedy

changes in, in the whole, uh, world, including nature, ecosystems and, and technical stuff.

Everything is changing at an increasing spa, uh, speed. And, uh, so we need to train students and people and practitioners who are able [00:09:00] to make sense. What, um, are the worthwhile, worthwhile problems to be solved? Mm. And, and that's an important skill set that doesn't kind of, uh, grow old. You just need to learn new tools.

AI has, uh, become, uh, available recently in, in a form that actually gives you pretty much like superpowers, uh, to think in a reflective fashion. And, um, in terms of pedagogies, uh, what I uh, use a lot is learning diary. Hmm.

Irina: Interesting. Yeah.

Salu: And, um, that in my opinion, is the one most powerful learning tool you can have for this kind of, uh, skillset, like reflective thinking because it, it, uh, forces students to, uh, put give form to their experiences.

[00:10:00] So it's kind of enables them to really kind of, uh, get back to what. Did I do? Why did I do that? And in addition to just writing stories, I ask students to read academic literature and then reflect or relate their own experiences and their own plans, um, to the literature. And through that they start to, uh, build connections, uh, to kind of things that have been there longer in the history and hopefully also.

Therefore, uh, being relevant for a longer time. Um, and in, in terms of pedagogical structure, I always have, uh, projects. So the teaching is project based and, um, it's quite different. Um, typically in engineering schools, you seldom have just projects. Uh, as compared to [00:11:00] my teaching, every course is a project course.

Um, so, um, in engineering you have like a theory that you expect the students to learn. You present the theory, it's foundations, practical implications, and then a way to calculate the stuff in a particular method, methodic manner that gives you the correct result. Um, with design it's completely different and through projects there is no correct result.

There are just different. Results that work in different ways. And you need to start to appreciate the ways things work. And, uh, there are just different perspectives that you need to bring into the discussion. Typically, the, uh, what

I'm asking the students to take into account, first of all, the perspective of the user.

Okay. Yeah, that's good. Good point. Um. And that I typically conceptualize in, in, uh, terms of desirability so that we, we should have desirable products in [00:12:00] the end of the line. Uh, the other aspect is, is, uh, feasibility. So we should have technologies that can be built and, um, that it actually is a, how you say, solid, uh, way to solve the problem.

Because there are typically a ton of different ways of solving a complex technical problem. Mm-hmm. And it requires quite a bit of skill and learning to be able to do that. Um, then, uh, there's the third perspective is the business side. Like, uh, so that you need to pre be able to bring about ideas that are viable so that they're sustainable, um, and, uh, that you can actually build the things if you create physical products that, um.

It makes actually sense to create those so that you're not creating something extensively expensive that people would not be able to afford. So that perspective is crucial for, uh, [00:13:00] the whole as well. So user, users and technology and, and then the, the business side needs to be considered, and, and that's wonderfully captured in the IDBM program structure.

Irina: And have you been using these, uh, pedagogical methods or teaching methods in all your courses? So not only the IDBM course, but also then in the engineering courses you are running?

Salu: Yeah, I'm, I'm always, there's a project and I've been very positively surprised by the capabilities of freshmen, like the first year students in the autumn.

To be openly learning to become like thinking like designers. Um, they haven't yet been spoiled by the engineering navigation to to be too rigid in their thinking. Um, later towards the end of their studies, they tend to be really, really, uh, [00:14:00] nervous when, when they are introduced with the challenges that designers work with that are, uh, character characterized by open-ended design, brief and ambiguity.

Uh, and different opinions and yeah, I've seen people struggle with that. Mm. But, um, the freshmen, the first year students are somehow very wonderfully open to this kind of work. And, uh, yeah, the pedagogy works there and the pedagogy also works with the Masters. Uh, nevertheless, I, I've learned now that I have been developing the diary feedback system, uh.

Uh, to become very, very structured. And, and I can now, uh, with the help of, uh, a very sophisticated AI tool that I've been developing to give, uh, precise feedback on the quality of content of the diaries. Um, there are several, uh, dimensions of reflexivity and reflectivity and shaping [00:15:00] that I'm, uh, analyzing through the diaries.

And, um, I noticed that my first year students, um. Learned to be better writers on their first semester as compared to IDBM students. Oh, really? On their Masters. Uh, that was a surprise to me. Um, some of the students were able to, in, in my kind of last semester, uh, in Neppi course, in IDBM, they were able to catch on through the feedback, but some were very much, um, against, uh.

The, the way I was, uh, doing the diary writing. Um, I guess there is the reason that they, they've grown up already, uh, to particular style of writing, learning diaries and getting feedback. And then when in, in the course, which only last like six weeks, uh, they just refuse to change their practices that they all already developed.

So that, that way [00:16:00] I, I really like working with the. Focuses, yeah. The first year students, because they're so flexible, so malleable and so kind of welcoming to new kinds of way of working and, and then adapting those, they become brilliant reflective thinkers already in a matter of half year.

Irina: Hmm. That sounds really, really exciting because we have had some issues also with the learning diaries.

We are using them in quite many courses. And the Department of Design, but they are relatively workload heavy for the teachers. How typically, how big are your courses? How many students do you have?

Salu: Roughly 60 students.

Irina: Yeah.

Salu: And then, yeah, I, I tried last autumn, final time, I tried that to have two courses at the same time, running with, uh, weekly learning diaries.

So I was reading 114 Learning diaries a week. And I, it's not possible [00:17:00] to make that sensible. Um, but 60 diaries a week is a sustainable amount. And what I've learned with, uh, working with AI is that it does not actually reduce the workload of a teacher who has to, um, with, with ai, you actually have to read the diary.

You need to also read the feedback from the ai, and you need to edit the. Comment statement, um, on the diary and, um, compared to the previous practice that I had, that I had only kind of technical criteria for what the diary should fulfill, like a word count, that you should have a picture, you should label the picture, you should cite the picture in your.

Body text, you should have a citation of an academic paper and then reference, which is formatted correctly. So that way I was promoting that uh, the students would learn academic writing practices, which I learned when I was still working in the Department of Design. I learned that students only [00:18:00] started reading and writing on their masters.

Uh, and it was a struggle to get, uh, students to actually write good quality academic texts and. For that reason, I, I, now I'm teaching the students on the very first semester in the university to read, write in the correct academic fashion. And they are brilliant writers already in the end of the first, uh, uh, semester.

Irina: Yeah.

Salu: And IDBM students are already, they are good fright writers. They know the academic practices, but the, um, the criteria that I was using in the diaries, uh, they're so superficial and, uh. Uh, getting into the content, giving content related, uh, deeper feedback. It required a lot of brain power from the teacher.

And, uh, if you have 60 students, you just can't do that properly. Mm. And so that you, you can't really deeply engage, uh, with the content of different kinds of students [00:19:00] learning diaries every week. And that, that was the reason I started to develop that, um, uh, reflection analyzer. Originally, I named it that, but it's currently a diary analyzer tool.

Irina: Okay. So you have an actual tool developed for this. Is it something that others can use as well?

Salu: Uh, if you'll, uh, it, um, I, I can perfectly tell about the history of that. Yeah. So, um, because I, I've used the learning diaries so much and, um, then. Central into the learning diaries is the concept of reflection.

And uh, then I, um, when I was like 22 years ago in Denmark, uh, visiting Professor Jacob Bor, um, and I was uh, uh, participating the, their what, uh, they were called portfolio exams in the end of their semester where the student is

presenting what they have learned, uh, through a [00:20:00] half, half an hour presentation and.

Jacob told me that there are actually, I could expect to see three levels of reflection in the presentations. And the first one is pretty much chronological reporting of the, what they did. Um, in the semester. That would be the, the poorest, the most weak, uh, form of the presentations. The second level would be about themes so that they, they, for example, they would talk about, uh, user experience related stuff.

They would, uh, uh, uh, explain that in terms of mechanical engineering, we learned this and that. So it was thematically grouped, uh, work, whereas the, the highest level. Uh, presentations would be that they would have some sort of a perspective of theory or lens through which they, they were perceiving their learning jo, um, journey through the semester.

Uh, for example, uh, thinking [00:21:00] design as language and, and analyzing things through that lens or design. Am I doing design or research? Having that kind of deep question. So those were, uh, kind of some, they had the unified character to them. And, um, so I picked up these ideas from Yago that, okay, if we would do a simple AI that could say if this is a reporting, the of the clustering or unified theoretical work, um, could we simply categorize the quality and ts uh, three broad categories.

Yes, we good. Um, and I learned on the first day I tried it that okay, it's not enough. Uh, there's so much more, the reflection and, um, after the first day of, uh, rehearsing with my own learning diary, so I, I brought my, about my experience of teaching the, the first day and, and I threw it into [00:22:00] the AI analysis, and then I, I was like.

Uh, horrified by the poor results. And then of course, I, I had to, the ai, how it works is that you need to tell it what to look for, and you need to give it very detailed instructions. And the better the instruction is, the better the output. So then, uh, I was reading the feedback. I knew what I had written, then I had to develop better instruction.

And then through this kind of, I would say critique or disagreement, uh, driven process, uh, I have now written, uh, or read and, and given feedback to thousands of diaries.

Irina: Yeah.

Salu: So in, in the, uh, I started this in 2024, like, uh, more than a one and a half years ago and used it in three different courses and, um.

So it, it has evolved a lot and now there is, uh, [00:23:00] in addition reflection with five, uh, different categories, kind of sub dimensions to that I don't recall by heart. Yeah, there was, uh, there's reflexivity, like how the student is, uh, navigating through their own personal learning identity and how they are evolving.

Um, so displaying awareness of that. And then there's the shaping, like how they're displaying the kind of productive attitude, how they are taking initiative and, and how they are also gaining agency in their projects. And those, there are kind of clear indicators how users can tell about these in their learning diaries.

Irina: Mm-hmm.

Salu: And it has proven super powerful. Like, I think, um, in, in the Neppi course, I think that time is a bit too short. To learn all those in a matter of six weeks. But when I have, uh, like a full curriculum where I first meet the [00:24:00] students on the first semester, then on the, uh, spring of the second year and then final project, I can have the students grow into really powerful, uh, professional thinkers already in, in a matter of their, uh, studies.

So that pedagogy really works.

Irina: Hmm. Have you been sharing this also with others? Have you been writing articles or something?

Salu: Yeah, just on Friday we submitted an article with Tua Björklund, um, yeah, to conference, um, in UK and this summer I hope it goes through. Um, so, but I, I would consider this is a major contribution, not only to kind of diary analysis, but uh, theoretically, uh, in, in that university pedagogy as well, because this combines.

Uh, experience is from the design school, from the engineering school, and from the business. So it's kind of, the designers are really displaying this reflective practice [00:25:00] in, in how they're taught. I, I worked there with designers for over 13 years when I was a researcher there. Um, now I have been here, uh, with electrical engineers for over eight years, eight and a half years.

So. I know how they're trained, what is their typical, the pedagogic for training the specialist skills. And, um, with IDBM, um, I have also been introduced to

this kind of entrepreneurial, entrepreneurial way of thinking and doing and how the pedagogic works. And there I would see that the, the third aspect of shaping is really unique.

And really mostly presented in the context of business people so that you actually need to get things done.

Irina: Mm-hmm.

Salu: You need to get resources, you need to be able to negotiate, you need to get the agency to make a change in the world. So I don't see there is another person having traveled through this kind of a journey, being able to [00:26:00] combine these pedagogies from different schools into one unified theory.

Um, and also implement a practical tool for that.

Irina: Hmm. This may be then you have been already answering my next, uh, question because of course, uh, uh, as educators, uh, we have a lot of responsibility on how to then give the students, uh. Uh, relevant skills and, and know how to actually solve the wicked problems in the world, or at least quite, uh, big problems.

Uh, but do you have anything else to add on this? That, how do we support the development of these kind of genius problem solvers that we are expected to, to educate?

Salu: Yeah. They, in the kind of engineering, they, they develop engineers. Problem solvers. Um, but I, I would see that rather than only catering for solving problems, we, we need to develop people who are able to see what problems are worth [00:27:00] solving.

Irina: Mm.

Salu: That's even more important. So, but those both skills are essential so that we, um, reflective skills are especially important for discovering what problems there are that we actually should invest in. And then, uh, the problem solving skills, those are mostly what I would call the specialist skills. And now here we have the two kind of mindsets, reflection and, and, uh, specialization.

But then we also need to have the third aspect there, making change. And that's not, uh, something that you easily conceptualize just through problems.

Irina: Hmm. So then you kind of refer to these three. There were the specialist skills, then there were the reflective skills and shaping skills. Yes. So these three aspects, do you have plans then on, on sharing this within the al [00:28:00] uh, community and, uh, the teachers?

Sure. And

Salu: also the tooling for the diary and stuff. The, the tooling, eh, developing it or kind of, um. Giving it out to another teacher, um, will be a challenge. Uh, the course courses have always unique context dependent aspects, um, with change every time. So, um, how do we communicate that as easily as possible from one teacher, uh, to another, um, into the system?

So then that's a kind of, on one hand, a usability issue. Yeah. Do what, how do people understand what, uh, and how to instruct? Then there will be, um, always, uh, a couple of learning diaries over the course that somehow challenge the, um, uh, wisdom that has been input into the prompt. Um, I learned that through my, uh, [00:29:00] first year students.

They, they started to learn so quickly that they, they were better. Performance than what the prompt was or what the AI was able to detect. So AI was actually grading their work rather low. But I immediately see that there's so much depth, so much kind of integrated, uh, wisdom in, in how the, the students was writing, um, that I had to completely change the, the algorithm, uh, or the instruction for the ai.

So there will be, uh, surprises for teachers and it'll be a challenge for teachers then to disagree with AI and how to bring about the changes into the, the system instruction. How, how could we enable the, my colleagues to do that without them having some sort of a very kind of rigid system. And, uh, [00:30:00] maintenance updates.

Mm. So we'll see.

Irina: In the beginning, you of our talk, you were, uh, mentioning the, the failing part. And of course, the, the importance of failing is something that we are all aware of. But can you, can you share this, uh, fail failure experience that you referred to?

Salu: Yeah. Especially I would say that Neppi course was my biggest failure

Irina: Mm.

Salu: Ever in the university career. So we established a course with, uh, a professor of practice, Pekka Nikander, who was here in 2018. And, uh, he was very much interested in developing new course. We were kind of first, uh, targeting bachelor's, but then suddenly there was an opportunity in IDBM program. For us to create a course to the program itself.

So we just kind jumped in that. Okay, we create [00:31:00] something. Uh, I had my user-centered concept, design background, and then Pekka had very deep technological background and we, uh, I created, okay, we create a course. And, uh, through the, the experiments I learned that there is like a. Light years distance between the technical detail that Pekka was teaching and my conceptual ambiguity, user-centered way with really, uh, kind of, yeah.

The distance was so huge that I, I, um, I. It, it's insane that the students survived the first course. Yeah. The, um, the feedback was, I recall from the students that, okay, hands down the worst course ever. And I invested, uh, insane amount of, um, time creating it. So I, I had created there. Um, at the time, the, the blockchain stuff was really, uh.

On kind of top of mind Yeah. [00:32:00] Of our tech technologists and, uh, to, we developed a way of how, how you could kind of, uh, be rewarded for your collaboration and, uh, for innovative ideas. And, and that was a very complicated point gathering system. That the students hated after. Oh, but I'm not getting into the details of that, but it's, it was really devastating to get that feedback.

After investing a ton of time, really, we, we wanted to make a super good course that failed miserably. Um, next year. Pretty much the same, still next year. And I was like, uh, ready to give up the whole thing. Uh, unless we would completely. Redesign at the time pickup resigned from also. And so I had the freedom then to kind of completely rework the course.

And, uh, then, um, I really got back to, um, [00:33:00] what kind of students we have and what are the profiles that we want to, uh, contribute to developing in the course. Um, I had also learned that it doesn't make to. It makes sense to try to, uh, teach programming to business students in a matter of six weeks or design students.

It's just too short time for getting anywhere meaningful. And, um, so we had to figure out ways, how could we design a pedagogy that would work for this very diverse audience that we would have. Um. Uh, although there, there's kind of a

common characteristic that I would say in IDBM, they are, as the program says, indu, uh, like design business management.

So these are people who probably would end up in positions like product manager, entrepreneur, um, like higher position where they might not themselves do. [00:34:00] All the hard work of building that equipment, but guiding understanding to, to be able to negotiate with different kinds of people and, and be able to speak the languages of the other professionals like you.

You must be able to speak to an engineer with such precision that, uh, there's no confusion as what you mean by snappy experience. You need to tell the milliseconds.

Irina: Hmm.

Salu: And um. Then once you go to that level, it also sets requirements for the designers who claim that, okay, you should do this nappy thing, but you need to be able to tell, uh, it to the engineer in a way, uh, that's, uh, unambiguous.

And uh, then you need to find out what is the tolerance. So you need to do better research as a, a designer as well. And then, uh, of course there will be the business person saying that, okay, that requires too much work. [00:35:00] We just need to. Uh, let's make a ready made component, uh, or buy it and yeah. Uh, not waste time in, in working it, uh, ourselves.

And then, um, I redesigned the course so that the teaching assistants, um, became the programmers and the creators of the prototypes and the IDBMers their instructors.

Irina: Ah,

Salu: so they, they were guiding like what the TA should be doing for them. And also, um, I designed, uh, a complicated technical system in the beginning of the course called Hex Machine.

Irina: Oh, hex Machine.

Salu: Hex. So it's Hexagonal Towers.

Irina: Okay.

Salu: It's a, like a labyrinth where the students re are asked to create a system that takes a steel ball from one corner of the labyrinth to the other without touching. So you need to sense when the ball comes into your tower, you need to build a electro, uh, kind of [00:36:00] electronic mechanism that detects the ball and then transports it out from your tower, uh, to a dedicated next tower through a dedicated hole in the side of the tower.

And that proved to be a wonderful experiment. Um. In many regards, uh, it, it fits perfectly to the course topic, networked partnering, um, because the students are forced to negotiate with each other, like how the ball is traveling, how we are building the maze, uh, structure. Uh, how high are you sending the ball to our tower?

Uh, through wa hole in the side of the tower. Uh, we are expecting it. Um, how do we build the mechanism? Uh, and then, um, they are introduced the concept of, uh, internet of Things because they then on the second week, they need to make it interactive so that, uh, the audience has a voting [00:37:00] app where they're voting like, okay, does it go left or right from your tower?

And, uh, so it gets, uh, quite complicated technically. Uh, even though we are not revealing all the details of the technical complexity at that, uh, phase, so that, um, the discussions that the students are engaged in, in that, uh, exercise, they, it, it reflects quite a lot the level that I'm expecting later in the course where they do an actual design project, but they do the kind of foundational concept design with user centered way, and then there's a.

A final exhibition called Expo like. Oh, okay. Neppi expo, where the students are presenting their concepts, uh, with functional prototypes that our TAs have been helping them to build.

Irina: Mm-hmm. But these are digital prototypes, like

Salu: digital. So they have electronics, they have embedded, like, uh, circuit boards.

They have

Irina: Ah, okay. So they're physical. They're making also the [00:38:00] physical Physical.

Salu: Physical, yeah. And they are interacting with internet. Wow. So the wow. Depending on the backgrounds of students, of course they are, um, able to

create, uh, there are students who have studied robotics. Yes, they have students who have studied computer science, web design, so forth.

So, and the course also help kind of enables students from different backgrounds to utilize their background, but it doesn't require, uh, a student to have that engineering background to start with. So in the end, the, the students, I would say they, they develop skills to. Be managers of different kinds of, uh, peers, uh, that talk different languages.

Irina: Mm. How big are the teams?

Salu: So they're working in six person teams. Okay. Somewhat large. Um, but that seems to have proven to work pretty well for, um, for that project.

Irina: So what kind of feedback do you get now from [00:39:00] the course? So in the beginning it was the. By far the worst course ever. And

Salu: feedback, not the students, based on the gradings of the, of the student feedbacks from, from the, um, courses, all courses in IDBM, this is their favorite.

It has gained the best scores.

Irina: Wow.

Salu: Across all, all the IDBM courses.

Irina: Hmm.

Salu: So. It's a strong evidence that this works.

Irina: This works. And, and what do you think, what is the reason why this works? Like really, is it about the doing so that they get into actual, uh, like physical execution or what's the, what's the secret of the course?

Salu: I think we are, we have been able to, uh, make the course design such where regardless of the student background, they can learn something meaningful to them.

Irina: Mm.

Salu: In order to train on those skills that, uh, make them better international design business managers in the future.

Irina: Mm. [00:40:00]

Salu: Somehow it kind of, it's very self organized.

It's very chaotic to my eye. Uh, kind of, uh, it's sometimes difficult to even understand or know what's happening inside all the teams. Um, that's also why I. I see the value of the learning diary is so important because then I have a, a probe into the minds of the student, uh, students, so that I, I, I have a sense of what's happening in the course.

Um, when I, a couple of years ago, I didn't use the learning diary and, and I was completely lost, like, what is happening? And then the grading was also a challenge. Uh, so, um, I would say that in, in this kind of teamwork project course. Uh, we should give, uh, also a lot of emphasis to the students' personal, uh, learning effort.

Uh, and it's really difficult if we only create the team, uh, results. Uh, because then you get free riders. Yeah. [00:41:00]

Irina: Yeah. Yeah. And that happens in many courses as well.

Salu: Yeah.

Irina: That sometimes some students just can't contribute as much as others.

Salu: Yeah. And one, one thing that I changed, um, a couple of years ago when chat gpt came, was that I switched from my online, uh, exercise.

So there, there is a little bit of this specialist knowing that I want them to learn in the course. Yeah. And that relates to Internet of things, so that I ask them to learn that, okay, there are these easy. Um, four building blocks of internet of things. You have the app, you have the cloud, you have the thing, and you have the network.

And all these have to be in all internet of things, products. And then they need to learn this through the course. And then I have an oral exam, so I'm interviewing all the students after the course, um, for 15 minutes per student. So they need to remember these four and then the viability, visibility and, uh,

[00:42:00] desirability try out, and then they get the full points if they remember those seven things.

So it's very easy ex uh, exam. Uh, but yeah, somehow it, uh, had the traumatic difference on how the students are attending the lecture sessions. Um, and um, then their. Uh, yeah, they actually learned those things.

Irina: Um, we've been discussing, uh, quite a lot about the skills and the know-how and, and the different pogs also, how to then, uh, convey these, uh, skills for the students.

Uh, is there something that we haven't mentioned or something that you would still like to point out? Uh, when it comes to the teaching, the IDBM, uh, students or the engineering students

Salu: and maybe. Just coming back to that framework, um, of reflection and specialization and, and shaping. Um, I [00:43:00] actually, last spring I had another failure.

Irina: Okay.

Salu: Um, it was an engineering course. Um, we had redesigned my five credit course into 10 credit engineering course called Design Thinking and Advanced Prototyping, and. I created very extensive training for, um, the students. Um, I had teams of six students, and I, I asked them to form the group so that you would have different specialization for each student.

So one student was the hardware, the circuit board person. The other student became the software person for that hardware. It's called firmware. Uh, then there was a cloud programming architect, uh, role. Then there was app, uh, programmer, like web apps. Uh, then there was the user, uh, interaction designer slash user experience specialist role.

Then we [00:44:00] had physical slash mechanical designer, and we build like six weeks of training for these profiles. And then. I expected that, okay, we get wonderful things in the end of the course, and that didn't happen.

Irina: Mm-hmm.

Salu: Um, we only had like three of the seven teams after the course completing something sensible.

Irina: Right.

Salu: That was very half, very, very low percentage. Uh, and, um, some students were dropping the course. They were kind of just annoyed by the complexity of the technical stuff. Um, they did very, very. Uh, little, the kind of iterative prototyping, which is essential for digital thinking. And, uh, so the, the course was complete failure, uh, even though that I had invested a lot of their, uh, reflective capabilities and specialist capabil, uh, capabilities in, in the pedagogy, uh, but I was missing the shaping.

Mm-hmm. And there, I, I. I had [00:45:00] been kind of sensitized to the, the area of this kind of entrepreneurial mindset, uh, earlier on. Um, but I had not integrated that into my pedagogy. Uh, now it is there. So it was after that experience when I started to conceptually develop that further and develop that into the, the diary feedback thingy also.

So last year I didn't have that. Uh, shaping skills analysis in the learning diaries. But now I have, um, it was after last summer, um, in the autumn. It was the first time that I had the shaping there, and that was had, um, actually a dramatic, uh, impact on what students were doing.

Irina: Oh, okay.

Salu: Because then, uh, they are rewarded, uh, for the teamwork effort, for the sharing, for supporting.

Communication and all, all that stuff that shows that you are actually actively developing things. And, um, so that, that was a part, um, or [00:46:00] experience that, that really helped me to develop my pedagogy deeper and, um, that I will be carrying forward from an hour on.

Irina: Hmm. So

Salu: failures are good.

Irina: Failures are important.

Yeah. Uh, that's really, uh, true because then the, the learning also, uh, kind of, uh, accelerates when you fail.

Salu: Yes. If you don't fail, then you learn less.

Irina: Hmm. Yeah. This is a good, uh, guidance for the students as well.

Salu: Yeah.

Irina: So that they shouldn't be afraid of failing. Okay. Thank you, Salu. I think that we, we have, uh, already covered all the things that I wanted to cover.

Thank you for the interview.

Salu: Thank you.

Irina: Thanks.

Thank you for listening. I am your host. I, this episode was edited by [00:47:00] me and Aditya Parek, and produced by the IDBM program at Aalto University.