# ICED 2020 proceedings: The ICED 2020 interdisciplinary panel discussion

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## *Abstract*

The ICED interdisciplinary panel brought together two international leaders from industry and academia – Geneviève Feraud and Simon Henein – to discuss what the future-ready graduate is, and what changes are needed if higher education is to rise to the challenge of educating the future-ready graduate. They discuss the ways in which globalisation, digitalisation and changing modes of knowledge production challenge traditional approaches to university education. They identify what this means for students, universities and faculty development.

## *1 Introduction*

The ICED interdisciplinary panel brought together two internationally recognised leaders from industry and academia – Geneviève Feraud and Simon Henein – to discuss what the future ready graduate is and what changes are needed if higher education is to rise to the challenge of educating the future-ready graduate. Their discussion is presented here in the form of an interview conducted, transcribed and edited by Roland Tormey.

## *2 What is the future-ready graduate?*

*Roland Tormey: From what perspective do you approach the question of "what is the future ready graduate?"*

*Geneviève Feraud*: My PhD was in Business Administration with a focus on the use of technology in business administration. I did one postdoc at London Business School and one at Harvard Business School, and I spent ten years working in banking – I was Chief Information Officer for a large French bank. Then I moved to academia, where I taught on technology in business administration. I've now been at the UN for almost twenty years, where I am focused on capacity-building, education and technology, and now specifically looking at developing countries and how we can help them.

When you say the future-ready graduate I ask, "what does it mean to be ready?". The "future-ready graduate" is, for me, someone who is "ready to be ready": the current pandemic has, in a few months, dramatically changed our perspective and we know that the future-ready graduate will need to have a very solid basis of skills, but what she or he needs to master is

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the ability to constantly adapt. For me, instead of "readiness" I would prefer words like "adaptability" or "agility": the possibility to understand that we are now in a world of turbulence. We are not in a situation of certainty, and have moved beyond uncertainty – we have reached a situation of "partial ignorance", where we cannot even predict what the risks are, nor calculate their probability. So for me the future-ready graduate is someone who will have the "soft" skills that will enable her or him to adapt.

*RT: Simon, you've been working on the idea of the "body/mind split" in higher education.*

*Simon Henein*: Yes, I've been working on this in collaboration with some colleagues in psychology and education at the University of Neuchâtel. I teach micro-engineering at EPFL – more specifically, I teach second-year students how to design mechanisms. This is one side; the other side of my teaching is more artistic and in the field of humanities. I started an elective class for Master's students about three years ago called "improgineering", which is about using improvisation from performing arts like dance, music and drama as a tool to discuss the collective process of creating something in engineering. With my colleagues in Neuchâtel, we've been looking at the writings in the form of learning or reflexive diaries which emerge from students taking this course. One of the striking things they write is about the role of the body in the learning process. The body plays a central role in what they experience, what they learn and what they remember. It is a means to connect what they learn to their past history; if they can remember things they have physically lived in the past and connect them to things they are experiencing physically in the present, it allows them to bring the knowledge into their own lives – it is no longer something external to them, but internal. And it is also a means to connect to others. They connect to the body of the professor, to their colleagues, so it is a collective network of embodied people; the group emerges from the bodily connections. This is what emerges from the students' texts. So it is really interesting how the body seems to be central to the learning process. And this is quite different from the traditional notion – going back to Descartes – that the mind lives on its own and just needs the body to allow it to be transported from place to place. And universities have largely followed this track, which says that the body is really secondary, or even an obstacle: we can forget about the body – just sit on a chair during your classes; you can go jogging afterwards. Universities tend to invisibilize the bodies of students and teachers and thus miss fundamental aspects of learning and teaching processes.

## *3 For what future should they be ready?*

*RT: Can I project us into the future and ask about the future our students will live in? One way of looking at potential futures is to look at current trends and project them into the future. Since 2006, the World Economic Forum has produced a Global Gender Gap Report, which includes data on the economic power gap between women and men. At current rates of change, the global economic gap between men and women will not be closed until the year 2277(!) Of course, I take gender inequalities as just one example of inequalities: in recent times, for example, there has been a great deal of focus on the "Black Lives Matter" movement. From your perspective, what skills do our graduates need in a world that has been and may continue to be characterised by such inequalities?*

*GF*: I think that the first thing is that they need to be aware of it. This is not always the case. What often strikes me when I interact with Western graduates – European and North American – is that they may not be totally aware of the situation worldwide. This applies to inequalities which exist and in many cases are getting worse, but also to issues like global warming. In Western countries we are able to protect ourselves more or less from such impacts, but in the rest of the world that is not always the case. Some countries, some islands, will disappear with the rise in ocean water levels – we already know that.

There is another important issue: the types of job and work graduates will have. The nature of jobs is changing. There might be a growing inequality between some people who will be able to have interesting, highly skilled work, and others who will have difficult work at a very low skill level if they have a job at all. Alongside this is the growth in the informal economy and its impact on lives and economies.

Graduates will need curiosity. They will need to be able to go beyond what they see in front of them – if they are to see the reality. Because reality is quite different from what many graduates can perceive. I'm always surprised when I see graduates coming from different parts of the world, to see that they have many different representations of reality. But we can use that. When we show students, for example, the divide in digital access between Europe and the least developed countries, they are very surprised. We can use this ability to be surprised to help them become more and more open.

*SH*: I think it is a question of "feeling the other". If you don't feel the other then you can leave him or her to suffer without acting. It is a question of perceiving the other as a person. The question is how to make this happen.

The idea of getting students to go abroad to study is fantastic, because there is no way to see the other as a person by staying where you are. But even there, once you are in a different country with a different culture it is not easy to enter that culture. I grew up in Egypt – I spent the first eighteen years of my life in Cairo – and I think people totally underestimate the huge distance between cultures. You only become aware of it by going there and entering it, which is difficult. It is really easy to go somewhere and still "stay where you are". It is not enough to go somewhere: you have to meet people, interact, share a bedroom, a house, a meal. And it takes time. And here we go back to the skills required to be able to meet and interact with other people. And once you do that, you will not be able to live with inequality as it is. You will have a very strong drive, once you feel the person. Otherwise there is not an internal incentive. If it is just an external intellectual motivation then it won't drive me. But if I see the person and if I feel the person, then I will have a drive that I cannot stop. I will suffer if I don't do something. So I would bring the issue back to a person-to-person connection.

## *4 How can higher education prepare them for this?*

*RT: Does this mean study abroad needs to become a normal part of all university education? Because not all countries have normalized that practice: in the US, for example, about 20% of social science and business students study abroad, but as few as 3% of engineering students study abroad.*

*GF*: Yes, but going abroad is not enough. If you send a student abroad and she or he is going to work with students who are effectively from the same culture and who study in a similar way, then that it not enough. I think that graduates should be taught how to solve problems together with people from other cultures. As we see more and more problem-solving in education, it is important to solve them together with people from other cultures. Exactly for the reasons Simon explained: in a multicultural team, you will see that people do not see problems in the same way and that they don't solve problems in the same way. And that difference makes teams very effective. At the UN we have tons of stories of people coming from totally different cultures and being extremely efficient together. Our world is becoming increasingly complex. And you know the law that says a control system needs to have the same level of complexity as the system it regulates: you need to have complex teams to be able to solve complex problems. As a manager, I have often observed that multicultural teams are very effective.

*SH*: I think part of the problem is that we are stressing the students. If you ask students what their lives are like, you'll generally hear that they are in such stress from the very beginning

that they have no room to address any of the central issues we are discussing here, except perhaps with societies, clubs, and their friends. It appears that the university is not helping that; it is blocking it. The students speak about "alienation". Things that we don't want in their professional lives, we are already building in during their student lives. They say it was better when they were younger. They entered university and it stopped – it killed those possibilities. I think we are squeezing them. That is maybe good in that they learn more stuff, but it is harder to keep that alive now than before. I say "keep alive" because that is the term that students use. And we are actively destroying it. We don't want to destroy it, but that is what we are often doing. I read this in the writings of my students – so this is not just my perspective.

What I am trying with my improgineering course is to propose something concrete that is an example of what is possible. Indeed, we first need to realise that it is possible to do something. Often if university teachers find some of their students intellectually bright but asocial, they will live with it and either say they were born as they are, or that this was the responsibility of their parents or school teachers. So we should realise first that it is something that you can maybe not "teach" but you can "work on" at the university. Once you trust that, you look for teachers who have the skills to make evolution happen. And that requires guts, because it is new; you are crossing many borders; you are doing things that are not "normal": so I teach barefoot, I dance with my students. It is not normal for an engineering professor, it shocks you yourself, it shocks people who look at it. But the shock doesn't last long. Maybe a couple of weeks – you have to accept that and then everyone forgets about it and you can focus on the ongoing transformations. We are blocked for cultural reasons, and we can unlock some of these blockages easily if we dare.

So I don't have answers, but I have an example: improgineering could be taken as a reference for other initiatives. I've met others who are using the same fractures in the system to allow the flowers to come up. It is possible to make it happen especially as the demand is strong from both ends: from the students and from the industrial fabric, as you're consistently hearing from Geneviève and me today.

*GF*: If I were in charge of developing higher education, I would dream of a fine-tuned balance between technology and humanity. I would teach my students Artificial Intelligence and Emotional Intelligence with the same level of importance and the same level of mastery. In the future the graduates will need to master the digital world, but they will need to balance and mitigate that. When you look at higher education systems in the world today, most of them are heavily characterised: either you are an engineer or a scientist, in which case you may know little about sociology, psychology, philosophy for example – or vice-versa. This dichotomy should disappear. All graduates need to be able to at least understand both sides. Which is why I'm so interested in Simon using theatre techniques with engineering students, because we need a higher education system which has fewer silos and more balance in terms of the knowledge and ability to think that students acquire.

*SH*: I think, yes, we have so much new knowledge and we want it to grow. But it is like a tree: as the branches of computational thinking and digital knowledge grow, we need to grow the roots of "embodied" thinking. In a digital world – especially now during the pandemic – we have become increasingly disembodied. We are talking but I can't see how you walked into the room, so I need something to compensate for that. We need to bring some balance.

## *5 What supports do higher education teachers need to achieve this?*

*RT: Simon, you talk about teachers being willing to be uncomfortable. Geneviève, you talk about working with other disciplines and that is also uncomfortable for teachers because it pushes them outside their comfort zones. So I'm wondering if part of the challenge we have is a teacher development challenge – we need to help teachers become better at being uncomfortable.*

*SH*: We don't learn knowledge, or a domain; we learn a person. For me, as a student I can substitute the name of the course with the name of the professor: I didn't just learn "Optics", I learned "Dändliker", who was the professor who taught that course at EPFL. I absorbed the teacher when I learned. So it is about a relationship with someone: learning is a relationship. This would be one element to prioritise.

For teachers, it is important to bring some of their particular personal lives as a professional into their teaching. To bring more of their passions into their teaching. That is a second element.

And thirdly, as students study, they should realise that that they can be a source of knowledge. We don't want them to learn; we want them to produce knowledge. We should start that from the beginning. To do so, the professor should be in a position where she or he is producing knowledge and learning, and then the students mirror this and learn and produce knowledge themselves. So instead of dropping knowledge from above onto students, you put yourself in a learning situation, you put yourself at your own limits and you let the students watch you searching and learning. Of course, your limits aren't theirs because you are older and more experienced, but they see you learning and this creates a very different relationship. You become peers. The only difference is the greying colour of your hair, but otherwise you are peers and you are doing the same thing, each according to their own limits.

And then a last thing: in order to make them realise that they are a source of knowledge, what they produce should have a cultural impact. So if you do with your students things that you will then produce for the outside world – it can be a book, a video, an exhibition, a performance, anything visible – then they realise that what they do has a cultural significance. If you show them that, then they realise they are already in interaction with the world. It is no longer "I study, then I have a job". They are already doing things that impact on society. It is no longer that they are just doing a set of exercises which will be read by no-one except a teaching assistant. Now what they are doing will be seen by the world, will be in interaction with the world – and they will have feedback from the world.

*GF*: Of course this might make the teacher uncomfortable, but knowledge creation is a co-production, knowledge creation is a conversation. The status of knowledge itself is changing dramatically. The conditions of the production of knowledge have already changed. When I was doing my PhD the way in which knowledge was produced is very different than today: for example, big data has changed the way in which scientific knowledge is produced. So the old idea of "owning" knowledge is not a source of authority anymore. What is a source of authority is being able to understand how knowledge is produced.

Maybe it also depends on where the authority of the teacher comes from. I have spent part of my life being a teacher and part being a manager. Where does your authority come from? In both situations the answer is the same: it comes from the fact that people trust you. And you know that students can accept the fact that you just don't know, providing you are sincere and transparent, and you can work together to find the solution. So I think that – as the production of knowledge changes – teachers will lose their position of authority based on their substantive knowledge and will gain a position of authority, or respect, from being able to say "I don't know, it is changing, and we are going to find together what we can do."

*SH*: Some teachers want to stay on their podiums – a posture which can actually be reinforced by students feeling comfortable and reassured by having a source to follow. But, as a teacher, if you step down they may step up; I am convinced they do. Once you step down, they rise. Once you trigger this, it is fantastic. And then you disappear a bit as a teacher, which is good. Maybe today students don't need the teacher who knew the truth about electromechanics or optics anymore, because there is a lot they can learn on their own by digital means; maybe what they need is someone who can create a frame in which they can rise, express and make things their own.

*RT: There is a huge amount to think about in what we've just discussed. What would be your final words, to conclude this interview?*

*GF*: I also think that graduates – whatever they want to do after university – need to have experience in both the private sector and in the public sector. I think it is fine if there is a very bright engineer who wants to work in a high-tech company, but I also think that this person will be advantaged if they understand the challenges being faced by a farmer in a developing country. The gap between the private and public spheres is disappearing and students need to be able to look at things from different perspectives. To take the example of digital identity: to understand this, we need to understand both the private sector interest in making a profit and the policy and rights challenges. I would also say that for our graduates, we need a tighter blend: between a very strong disciplinary knowledge, and at the same time have a fine sensitivity, for example, to ethics, and an understanding of humanities at large; we need that combination.

*SH*: Like Geneviève at the beginning of our interview, I wondered about the title: the "future-ready graduate"; I would favour the "resilient graduate" as an alternative title, as it addresses both our present vulnerability as well as our future. From an engineering point of view, resilience is a complex and powerful concept. If you look at what it means for a bridge or a city to be resilient, you will find all the things we need to develop in our students. If we make them resilient it will be helpful for them as individuals, but also for society. The term is also key in psychology and this is strongly relevant. It calls for returning to the forging of students as a whole person as a central responsibility of universities, far beyond traditional knowledge and skills transmission.