Future Skills Centre

Presented by
The Conference Board of Canada

Future Skills Centre Podcast

Episode 6: Skills for the Digital Economy

Technological change is affecting every sector, and these changes shift the roles and the skills in demand. Our guests share their perspectives on what needs to happen to ensure Canada has the skilled talent it needs to take full advantage of the growing digital economy. We hear about two rapid training initiatives that seek to help their learners transition mid-career to jobs in the digital economy.

Guests
Namir Anani, President & CEO, Information and Communications Technology Council (ICTC)
Rushmi Hasham, Director, Development and Accelerated Cybersecurity Training Programs, Rogers Cybersecure Catalyst
Nathalie Sanon, Head, Training Program, IVADO

Host
Linda Nazareth

Links

Future Skills Centre and Conference Board of Canada links, such as recommended articles and webpages, social media handles, etc.

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Rogers Cybersecure Catalyst:
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Transcript

Linda Nazareth:
You're listening to Season Two of the Future Skills Centre Podcast, gathering experts from all over Canada to explore the most crucial challenges to the future of work. I'm your host, Linda Nazareth. This podcast is brought to you by the Future Skills Centre and the Conference Board of Canada.

Canada is facing wide demographic and technological changes, and the COVID-19 pandemic has accelerated these disruptions to our work environment. Our economy is changing fast, and this means we have to change fast too.

Linda Nazareth:
Today, we're talking about the digital transformation of our economy. Automation, artificial intelligence, and other emerging technologies such as virtual or augmented reality and cloud computing are bringing swift changes to the skills needed in many sectors. New technologies bring both disruption and opportunities to our workplaces and economy.

Namir Anani:
All sectors of the Canadian economy are embracing technology. I mean, the economy is becoming digital and digital is becoming the economy.

Linda Nazareth:
That was Namir Anani, President & CEO of the Information and Communications Technology Council (ICTC). Namir tells us more about the technological disruptions that are changing the economy, and the world of work.

Namir Anani:
We have seen a shift in the industrial landscape in Canada and the last number of years is favoring growth in sustainable and green businesses in cleantech and clean resources as well as growth in health and biotechnology, advanced manufacturing, agri-food and food tech, as well as interactive media. There is a large traction in these growth sectors. And creating a large number of jobs in the next number of years in Canada, which is good prospects for Canada going forward, from a competitive landscape, from a positioning on the world stage, but also being more responsible and sustainable, creating the responsible and sustainable economy going forward.

Linda Nazareth:
These changes are happening not just in traditional "tech" sectors, but across all sectors of the economy.

Namir Anani:
For instance, the health sector is certainly advancing in big data, wearable medical devices, virtual, augmented reality, blockchain, and many of those to do remote diagnostic and remote monitoring. If you take even the farming industry with its vertical farming concept to respond to all year crop yield, ultimately, it has embraced a lot of the artificial intelligence, machine learning and IOT in that space.

The jobs that this is creating are quite substantive in this space. And they range from software related roles like software engineers, full stack developers, backend developers, ops jobs, data analytics, data scientists, user interface, user experience, and the list goes on in that environment. So they're certainly very well paying jobs. And it's becoming interesting to try and attract many Canadians to fill these jobs in the next number of years.

Linda Nazareth:
It's important to note that although we're focusing on advanced digital skills in this episode, basic digital skills have now become a requirement for nearly every job – tasks such as communicating over email and finding information online. In fact, digital literacy is listed by the Government of Canada as a "Skill for Success", alongside other basic skills like literacy and numeracy. Complementary skills such as business skills and people skills are also important.

Namir Anani:
There is a whole range of jobs being created in the digital economy. And it lends itself to really creating a shared future for Canadians in the next number of years. So, it's not only the deep technology knowledge, the ones that I mentioned earlier from full stack development, machine learning and others. Everybody in this economy, whether you are in the retail business, hospitality, whether you're in a technician role, or an operator in a manufacturing plant, you need some of those basic skills to be able to understand the use of computers, the use of cloud business. It does not involve you coding per se and having a very deep understanding of some of the skills necessary, the deep knowledge like Python proficiency or JavaScript or C++. For somebody, for instance, trying to adopt eCommerce, they can go to an eCommerce provider and embrace that Capability like Shopify and others, they don't need to know coding techniques, whether it's through beyond rails or, or Python or others, to be able to be in that space.

And there are hybrid jobs that are being created, like the business analysts, the managerial jobs that are requiring different skills but also lend themselves to some knowledge of digital and technology space. One thing is important to say as well, is that aside from the deep technology skills, we're seeing an increase in demand for human centric skills as well. Whether you call them soft skills, life skills, or human skills, ultimately for a company to move the needle, you need to be able to collaborate, communicate – it's about people, it's about having the empathy, the emotional intelligence, the collaboration skills to be able to do that.

The environment that we are in and the future of work, and the fact that we are increasingly working from home, or at least a hybrid environment, lends itself more and more to creating opportunities for people to engage further because we are in an increasingly contact-free economy. We're doing a lot of our learning online. We're doing a lot of our work online as well. And hence it may lend itself to engage more of the underemployed, unemployed, populations of lesser representation into this economy and engage them further into not only reskilling and upskilling, but also to be part of the employment and the workforce, part of today and tomorrow's economy.

Linda Nazareth:
The digital economy is big business. An estimated 70 per cent of the new business value over the next decade will be based on digitally-enabled platforms. To enable this sector, the Information and Communications Technology Council forecasts that employment in the Canadian digital economy will need to grow to 2.26 million by 2025. This creates demand for an additional 250,000 jobs. We asked Namir what he believes needs to happen to make sure Canada has the skilled talent it needs for the expanding digital economy.

Namir Anani:
I think we have to amplify the work that we're doing so far. I mean, Canada has been positioning quite well in the last number of years on many of the skills development capabilities through the work that the Future Skills Centre does and piloting some of these programs, the work integrated learning, and many others on that. But there are a couple of important sorts of pillars that we need to look at to develop the skills and talent for the future economy. First of all is building the talent pipeline and the talent stream early in schooling. I think we have to start by attracting some of the youth, even in high schools and then engage them with in the continuum of post-secondary education and involve them in experiential learning, through work-integrated learning and others to help bridge between academic institutions and the industry to make sure that they are billable as fast as possible by the industry. It's a wording that the industry uses, specifically because the large majority of Canada's industries are small, they don't have the deep pockets to continue training for a continuous number of months. So short duration training and development, up to four to six months will be critical for the industry to help them engage in that space.

The second pillar is how do we ensure that we are reskilling and upskilling the current workforce, because our competitive landscape is getting very much global and complex. And hence we have to ensure that our businesses are able to compete on a global stage And, to do that – reskilling is to reskill from one sector to another and upskilling, as you know, is to upskill within the industry itself and heighten the capabilities of adopting these new technologies and help companies transform and become more competitive. There are several programs that are being put on the table by the Government of Canada, also the provinces into that space, and we have to accelerate those. I think our competitive advantage in the next number of years hinges on our ability to maintain that reskilling and upskilling specifically when technology automation, artificial intelligence is playing a bigger component.

If we go to the third pillar, the other dimension of talent is how do we attract the skilled workers globally to be part of Canada's growth economy? And there are several programs that are happening in Canada, from immigration and others. We manage part of that and it's important to continue to look into attracting the best and the highly skilled workers to grow our economy going forward.

Linda Nazareth:
Namir highlights the importance of upskilling and reskilling as tools to help individuals develop the skills that businesses need to succeed in the digital economy. Next, we will hear from two guests who are leading examples of this sort of training. These programs aim to build advanced technology skills in individuals who are already in the workforce. First, here's Rushmi Hasham, Director, Development and Accelerated Cybersecurity Training Programs, at Rogers Cybersecure Catalyst. She tells us about the critical importance of the cybersecurity field and how their initiative is trying to help alleviate the field's critical labour shortage.

Rushmi Hasham:
I think as we all know, our lives are digital and as our lives become more digital, our communities are digital, our schools are digital, our economy, our governments. It's just the vulnerabilities that now lie within these digital realms in which we choose to live in: our finances, our health data, our most personal data, the way we choose to communicate, the way we choose to work, it's all relying on digital platforms that are created by individuals, where we know that speed is the essence of product development. And when you're looking at speed and innovation together, there's going to be holes and gaps that are created. All the attackers are finding are these vulnerabilities in the digital realm to access our data, to access our most private information.

We need to protect ourselves, and we can't do that without the trained cybersecurity professionals. And so, this demand is creating the need for more and more people to join the profession. In Canada right now, there is a stated number of 30,000 jobs vacant in cybersecurity. And that's the ones that we know of – the published jobs. When you start to dig deeper, it's probably three times that amount. Worldwide, the numbers are staggering at over a million cybersecurity roles are left unfulfilled, just due to lack of individuals choosing the profession or having access to the profession and companies not being able to hire fast enough. We have organizations just here in Canada, who in the next 12 months are looking for a couple of hundred cybersecurity professionals to join them. And when you start to think of these amounts and you go, wait a minute, isn't the economy slowing down, aren't we looking at, you know, companies not hiring? But in this profession, the investment is being made.

Linda Nazareth:
Another key insight about the cybersecurity sector we heard about from Rushmi is its view that diversity is key to the field's success.

Rushmi Hasham:
It's one of the few professions in tech that's really stood out and said, we need diversity, we're craving diversity. And I applaud the industry for recognizing that and I applaud them for redefining diversity. What does it mean? I like that they're asking for diversity of experience. I like that they're asking for diversity of thought, because it now brings individuals who have traditionally seen themselves marginalized on the periphery of a technical career of a career in cyber. And the reason we need it is we can't solve cybersecurity challenges by ourselves by sitting alone or with a group of people with the same background and thought process. As we rethink our approach to cybersecurity. I can tell you with certainty that we need cyber defenders who are as diverse as the problems and attacks we're trying to stop and solve. So, we have to move really quickly and rethinking and reshaping our cybersecurity defenses because our community, schools, commerce and governments can no longer wait.

Linda Nazareth:
Next, Rushmi tells us about the Cybersecurity training program they have been running since February 2020. The program focuses recruitment on demographics that they want to see enter the field, including women, mid-career individuals, and newcomers to Canada. They seek to lower the barriers of entry into the profession, by providing a short program that subsidizes participation and includes supports for learning and for finding employment. This requires a lower time investment than traditional degrees or diplomas, making it more accessible to adult learners.

Rushmi Hasham:
What I find the most interesting that our program has done, is the changing of individual's lives. So, it's the chef who's come into our program and who wants to move out of working in the kitchen and wants to change her career into cybersecurity. Through our seven-month intensive training, she actually came out to be the top scorer in her cybersecurity exams…and after that she received a wonderful job offer at one of Canada's largest telecommunications companies where she's now been for one year and has received two promotions already. As a chef you're looking 10 orders down. Take those skills and now you're looking 10 threats down. You're able to analyze what's required. You're able to stay calm under pressure, under high stress situations, and you're able to communicate as a team. So, this is what we're starting to learn is that career changers are really thriving in this industry. And the intentionality of the design of the program was to really create these pathways.

Linda Nazareth:
The program has seen a strong graduation rate, and a good response from employers. It supports workers to move into a new career; these job transitions are critical for Canadians to respond to the changing nature of work. We asked Rushmi what she thinks makes the program successful.

Rushmi Hasham:
The components of our program that I have, that have attributed to the success of our graduates is first and foremost, our partnership with the SANS Institute. SANS is the world's leader in cybersecurity training. This is the organization that trains the Homeland security in the US, trains NATO, and has developed programming for just being able to have individuals acquire deep knowledge in a very rapid way. And we partnered with them because they also trained towards the GIAC certification. GIAC is the standard for cybersecurity. Our program has three of SAN's training and certifications built in. This way, when graduates are going out into the work environment where employers see the GIAC certifications. They know the rigors of the training. They understand these individuals are ready to go into the workplace because the training has prepared them for immediate transition from a training program into a work environment – they are work-ready graduates.

We've also put in something that's very unique to our program, and that's a professional practice week. Professional practice week is where we want to make sure that we're bringing

in knowledge that's coming from all areas of industry as well. And we cover areas of cyber and ethics. Very important because you could use your knowledge for good, or you can use your knowledge as an adversary. We want to make sure that ethics is a big component of cybersecurity and what we are training. We also have cyber risk – being able to identify and communicate risk – because that's what cybersecurity is truly about is to be able to continuously identify, but now what do you do with it when you've identified it? How do you communicate it to a senior manager to say, I see a threat, I see a risk. We've also put into our programming tabletop exercises so our students can really see what a threat is looking like, how decisions are being made. What is the playbook and organization has when they're looking at threats? Then the last piece is communication. How do you communicate in this environment? Cybersecurity is not an individual contributor role. It is actually a team contributor role. So, you're always in a team. How do you communicate in a team? When do you take the lead? How do you support the team? So, we've really built that into the programming. And the last part is professional skills development, resume writing, interview skills, employment support. With that, we bring regularly throughout the seven-month journey employers who come into our program who are providing tech talks, keeping our learners engaged with the industry. What are the changes that are happening to the industry? What are some of the new tools that they should be aware of and employer branding? We want to bring in employers who are eager to hire our learners upon graduation. So, we do early employer branding activities. So, employers have continuous access to our learners. We're really excited to announce that we have an 86% job placement rate six months after graduation, one of the highest graduate employment rates after retraining programs such as ours.

Linda Nazareth:
Heading to Quebec, Nathalie Sanon leads the Training Program at IVADO, a collaborative institute in that province, focusing on advancing the field of digital and Artificial Intelligence (or AI). Part of IVADO's work includes continuing education offerings, such as workshops and on-demand online courses. Here's Nathalie to tell us about IVADO's learners.

Nathalie Sanon:
The idea of IVADO's training program is really to train subject matter experts. These are experts in a certain field, whether it be in health sciences, whether it be in engineering, whether it be in agronomy, for example, so that we can make these experts actually be able to use and adopt artificial intelligence into their processes and into whatever work that they are doing. The economy now is really asking, and industry is really asking for that; they're asking for people to know how to integrate AI. Right now, there's kind of a skills set gap between what people actually know and what people are doing and what they need for their work. Unfortunately, there aren't enough students coming out of universities. And also, these students may be specialized in, for example, AI or machine learning, but they don't yet have the specialty in as the subject matter experts do. And so, the idea is to really train the people that are already there. But we also have students that come to our training, in order to kind of get something a little bit further than the official training that they had in the university. We also find that a lot of people coming from social sciences are also very interested in this type of training. They're also interested in adopting AI within what they're doing. Let's take for example, people in history, for example, or in literature, needing to analyze great quantities of text with machine learning in an automated way. And so, we're working very hard to be able to also satisfy the people coming from technical backgrounds and non-technical backgrounds.

Linda Nazareth:
Together with the University of Montreal, IVADO is developing a short-duration, online AI training and certification program that will be available for workers and employers across Canada in English and French. Nathalie explains the logic behind the development of the certification.

Nathalie Sanon:
And this is something that was reported to us by industry, since there is so much training all around that people have access to, it's very difficult for them to know well, is this person who writes that they are a machine learning expert in their CV, are they really a machine learning expert or did they just take some course online maybe somewhere and then wrote that on their CV? The idea is to develop a tool to help employers really be able to test or evaluate the skills and the knowledge of future candidates. This is a tool that can be used, for example, during the interviewing process. You can ask this candidate now for the second part of this interview, you can go and do this test which will evaluate your knowledge on one part and your skills on another part on the second part, within AI. So, this is something new in AI. It doesn't really exist. You have big companies such as, of course, Google, Microsoft who develop some of these certifications, but they're not neutral. This was something that was very important for the industry was to have a tool that was independent. It will evaluate the knowledge and the skills of these trainees and we're kind of also creating a pool of experts in AI – that are really experts in AI – and that really actually know what they're doing. So that afterwards people can contact them for jobs, so that this can translate into employment.

Linda Nazareth:
In Nathalie's view, this feedback from the industry is critical. The coordination between education and the private sector means that training programs are relevant for the real world and that they help to solve the talent gaps that employers are currently facing. Next, Nathalie tells us a little bit more about how they are developing the training in partnership with industry.

Nathalie Sanon:
What we do is actually bridge academia with industry. And so, once these two start talking together, great things come out of that. Instead of both of them working on their own separately, academia can definitely help the industry with all of this knowledge that they have, but industry has the data. And of course, data is extremely important when we talk about machine learning, AI in general, and so putting the two together is really something that is working well.

In order to develop this professional certification in AI, we started simply with a prototype. This prototype was tested and brought to actual people from the industry. And so, people that will be using this tool to see is this a prototype that works? Is this something that you need, does it answer a specific need that you do have? And so, asking them questions, we went back, turned it around, changed it upside down and then suggested another prototype. So, this has been the way that we've been doing things in kind of an agile approach. I would say the challenge with that is that it takes a little more time, of course, than simply just thinking of something and then, oh, let's put it out there and see if it works. No. But, we do really feel since we really do have industry along with us, and of course IVADO's 120 industrial members, so we really have firsthand opinions and ideas of how this certification should look.

Linda Nazareth:
As we heard, new technologies are bringing both disruption and opportunities to our workplaces and economy. Basic digital skills have become essential to help every Canadian navigate digital classrooms and workplaces, use digital tools for work efficiency and productivity, and understand how new technologies can be used in their field of work.

A large number of industries are embracing this digital transformation across the economy, adopting technologies such as big data, augmented reality, cybersecurity and artificial intelligence in their day-to-day operations. This in turn also impacts these industries' processes and workforce, offering opportunities for individuals to learn these new tech skills and work in fast-growth tech activities like the ones we heard about today.

Transitioning Canada's workforce to the digital economy involves a number of changes in our learning and professional training system as well. In addition to building these skills at the university and college level in future graduates and young workers, upskilling and reskilling programs can help the current workforce adapt and grow their skills in these in-demand areas – and provide recognition of their skills and knowledge through certification. We must ensure that skills training programs are relevant and accessible to diverse groups, and that they work closely with industry partners, in order for individuals to acquire the digital skill sets that will support industry growth as well as their own professional development. More than ever, Canadians will need to be adaptive, creative and collaborative, adding and refining skills to keep pace with a world of work undergoing profound change.

Linda Nazareth:
This marks the end of our second season of the Future Skills Centre podcast, reviewing some of the key changes and disruptions that are taking place in Canada's economy, in our labour market and in the professional skills development field

Linda Nazareth:
If you enjoyed this episode, please subscribe, and recommend the podcast to others who might enjoy it. We encourage you to discover the earlier episodes of our podcast as well. Thanks for listening to this season of the Future Skills Centre Podcast. I'm your host, Linda Nazareth.

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